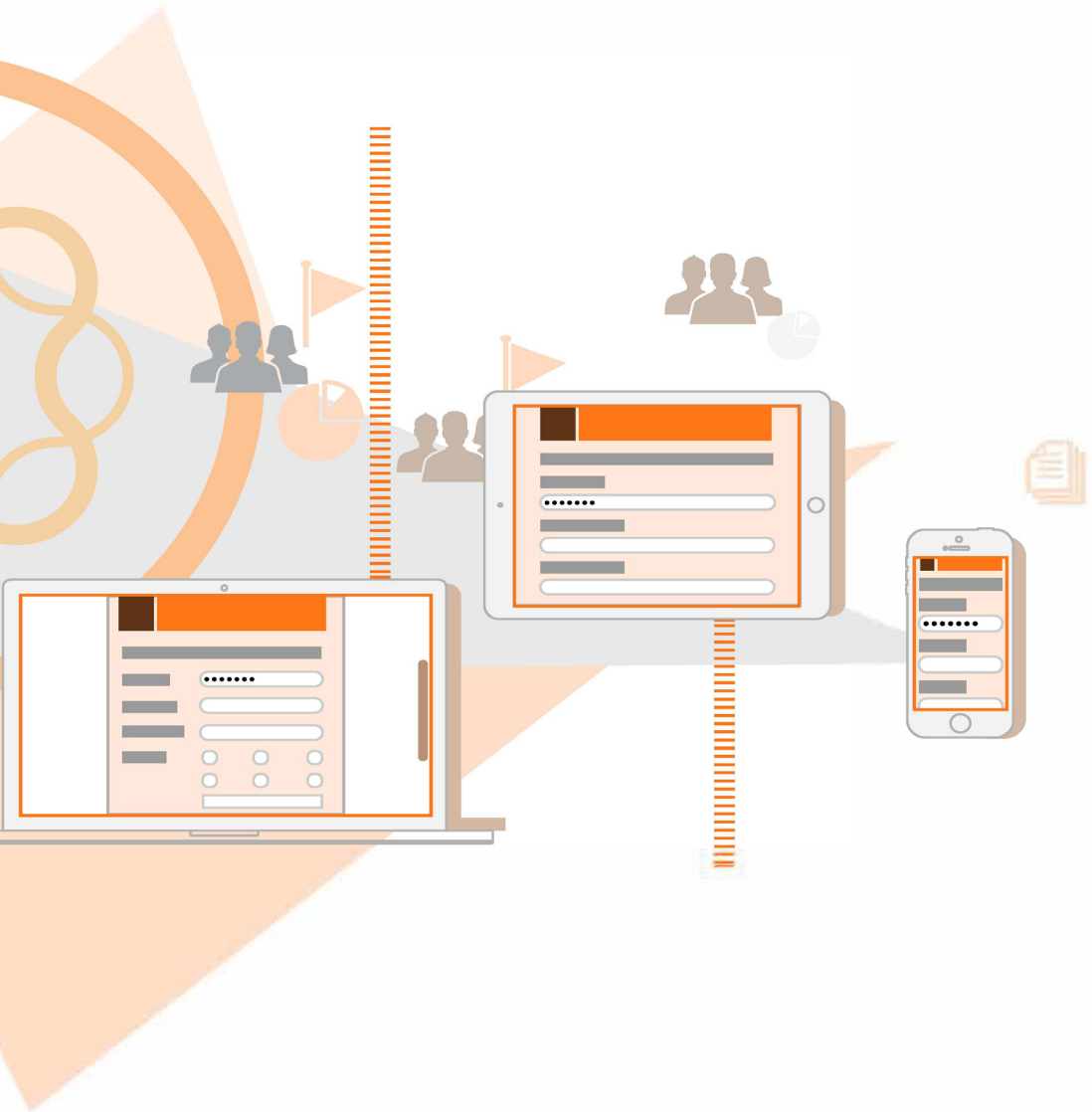
Upgrading from LiveCycle ES3 to Adobe Experience Manager forms on JEE for WebSphere



AEM 6.4 Forms

Legal notices

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1. About this document

AEM Forms on JEE is an enterprise server platform that helps you automate and streamline business processes. AEM Forms on JEE comprises the following components:

- J2EE-based Foundation provides server capabilities and runtime environment
- Tools to design, develop, and test AEM Forms on JEE Applications
- Modules and Services are deployed on AEM Forms on JEE Server, and provide functional services

For more information about the AEM Forms on JEE capabilities, see Introduction to AEM Forms.

1.1. Who should read this document?

This guide provides information for administrators and developers responsible for installing, upgrading, configuring, administering, or deploying AEM forms on JEE. It is assumed that readers are familiar with J2EE application servers, operating systems, database servers, and web environments.

1.2. Conventions used in this document

The installation and configuration documentation for AEM Forms on JEE uses the following naming conventions for common file paths.

Name	Default value	Description
[aem-forms root]	Windows: C:\Adobe\Adobe_Experience_Manager_Forms Linux: /opt/adobe/Adobe_Experience_Manager_Forms	The installation directory that is used for all AEM Forms on JEE modules. The installation directory contains subdirectories for Configuration Manager. This directory also includes directories related to the SDK and third-party products.
[appserver root]	WebSphere on Windows: C:\Program Files\IBM\WebSphere\AppServer\ WebSphere on Linux: /opt/IBM/WebSphere/AppServer/ WebSphere on AIX: /usr/IBM/WebSphere/AppServer	The application server directory that is used for all AEM Forms on JEE modules.
[server name]	server1	
[dbserver root]	Depends on the database type and your specification during installation.	The location where the AEM Forms on JEE database server is installed.

Name	Default value	Description
[*AEM_temp_dir*]	On Windows: C:\Adobe\Adobe_Experience_Manager_Forms\tmp On Linux: /opt/adobe/Adobe_Experience_Manager_Forms/tmp	The temporary directory for AEM Forms on JEE server.
[CRX_home]	On Windows: C:\Adobe\Adobe_Experience_Manager_Forms\crx-repository On Linux: /opt/adobe/Adobe_Experience_Manager_Forms/crx-repository	The directory that is used for installing the CRX repository.

Most of the information about directory locations in this guide is cross-platform (all filenames and paths are case-sensitive on non-Windows operating systems). Any platform-specific information is indicated as required.

1.3. Additional information

The resources in this table can help you learn more about AEM Forms on JEE.

For information about	See
AEM Forms on JEE and the modules	Introduction to AEM Forms
Performing administrative tasks	Administrationhelp
All the documentation available for AEM Forms on JEE	AEMFormsonJEEdocumentation
Patch updates, technical notes, and additional information about this product version	Adobe Enterprise Support

2. Introduction to upgrade

2.1. About upgrading, configuring, and deploying AEM Forms on JEE

LiveCycle to AEM 6.4 Forms on JEE is an out-of-the-place upgrade. Such upgrades involve installing, configuring, and deploying AEM Forms on JEE on a fresh operating system, application server, and database. Most of the work involved in upgrading from LiveCycle to AEM 6.4 Forms on JEE is done by Configuration Manager. The tasks that are specific to upgrade are integrated seamlessly into the configuration and deployment process.

2.2. How the AEM Forms on JEE upgrade works

Upgrading to AEM Forms on JEE involves these tasks:

1) Preparing your environment for the upgrade
2) Installing AEM Forms on J2EE
3) Running Configuration Manager to initiate the configure, upgrade, and deployment processes
4) Upgrading the CRX repository and migrating essential existing data
5) Performing post-deployment upgrade tasks

3. Preparing your environment for upgrading

3.1. Before you begin upgrade

Before you begin the upgrade, perform the following tasks to prepare your environment:

- Ensure that your existing platform (that is, application server, database, operating system, and hardware) is supported for AEM Forms on JEE. For more information, refer to the AEM Forms Supported Platform Combinations document.
- Choose a CRX repository type:

  AEM 6.4 uses Apache JackRabbit Oak-based repository. The Oak-based repository offers three persistence formats: TarMK, MongoMK, and RDBMK.

  For a single-server environment, TarMK is the preferred persistence format. MongoMK or RDBMK are the required persistence formats for clustered environments.

  For more information, see Choosing a persistence type for an AEM Forms installation.
- The architecture and topologies recommended for AEM Forms are different from LiveCycle. You may require a change in the current topology. For architecture and recommended topologies, see Architecture and deployment topologies for AEMForms.

The following set of tasks must be completed to ensure a successful upgrade from your current installation to AEM Forms:

1) Log in to your existing administration console and note the locations and settings for the global document storage (GDS) and AEM Forms fonts.
2) Export LiveCycle ES3 Correspondence Management assets, if you have installed Correspondence Management. You can use the migration script hosted at AEM Forms public library or the manual steps listed below to export Correspondence Management Assets:
   a) Log in to LiveCycle ES3 server as an administrator.
   b) Download and run the pre-migration utility on the LiveCycle server. For details, see Migration utility documentation.
   c) Open the URL http://[LiveCycle Server]:[port]/lc/cm and login as an administrator.
   d) Open the Manage Assets user interface. In the Admin tab, select Batch Operations.
   e) In the Export All Assets box, click Start Process. The status changes to In Process. Wait for the status to change to Success. When the status of the process changes to Success, click Download.
   f) The Export Assets pane prompts to select a location to download the package. Click OK. Select a folder to save the .zip file containing your assets and then click Save.

3) Run LiveCycle server in maintenance mode. Maintenance mode is useful when performing tasks such as patching a DSC, upgrading, or applying a service pack.

   a) In a web browser, enter:
   `http://[hostname]:[port]/dsc/servlet/DSCStartupServlet?maintenanceMode=pause&user=[administrator_username]&password=[password]`

   b) A "now paused" message is displayed in the browser window.

   NOTE: If you shut down the server while it is in maintenance mode, it will remain in maintenance mode when it is restarted. You must turn off maintenance mode after you finish the maintenance tasks.

4) Perform a cold backup of your data. The cold backup is required to roll-back the system to the original state, if required. Before taking a cold backup, stop your existing server and wait until all long-lived processes have stopped (or stop them manually, if necessary) and then proceed to perform a cold backup of your data.

   – **GDS directory:** This directory can reside either locally or on a shared network drive.
   – **crx-repository:** Back up the CRX repository. Before you take a backup of the crx-repository, create a folder named install in the crx-repository folder.
   – **Database:** Use the database backup utility to perform database backup. If your current database version is no longer supported, you must migrate your data to the new AEM Forms database.
   – **fonts:** Back up all Adobe and System font directories that are specified in the Configuration Manager (go to Settings > Core System > Configurations). Ensure that you back up the entire directory.
   – **Customer-installed fonts:** If you installed additional fonts in your AEM Forms environment, back them up separately.

   NOTE: For the location of GDS, Temp, and fonts directory, navigate to Home > Settings > Core System Settings > Core Configurations in administration console (adminUI).

   For LiveCycle to AEM 6.4 Forms upgrade, it is mandatory to change computers. Your watched folders on LiveCycle server may have files that are still in process, you can back up and copy those files to the changed computer after a successful upgrade.

5) **(Connectors for ECM only)** If your system includes Connector for EMC Documentum, Connector for IBM FileNet, or Connector for IBM Content Manager, verify if your current ECM version is supported in AEM Forms. If current ECM version is not supported, setup and use the supported version listed in the supported platform combinations document.

6) Copy the backed up AEM Forms data:

   – Copy the AEM Forms EAR files of the previous version, GDS directory, crx-repository, fonts, customer-installed fonts, Correspondence Management assets, and Forms assets to the new computer.
   – Migrate your backed up existing AEM Forms data to the new AEM Forms database.

3.1. System requirements

Prepare your server environment

Do the following tasks to prepare your server environment:

1) Read the AEM Forms on JEE Supported Platforms document and ensure that your software, hardware, operating systems, application server, databases, JDKs, and other infrastructure are compliant.
2) Install and configure the operating system, and update with the necessary patches and service packs.
3) Install and configure database server.
4) Install and configure the application server.

Privileges required to install on Windows

When installing on Windows, you must use an account that has administrator privileges. If you run the installer using a non-administrator account, provide the credentials of an account that has administrator privileges, when asked. Also, turn off the Windows UAC. AEM Forms installation and configuration processes require the UAC to be disabled.

Synchronizing clock times

You must ensure that all computers in a horizontal cluster synchronize their clock times regularly. Your AEM Forms on JEE installation may encounter problems if the node times differ by more than a few seconds.

Apply the standard time synchronization practices employed by your network to all computers of the AEM Forms on JEE cluster.

(Optional) Additional system requirements

Certain capabilities/platforms have a few additional requirements. If you are using the below listed capabilities of AEM Forms or running AEM Forms on Linux and AIX, see Appendix-Additionalsystemrequirements for detailed information about the additional requirements for:

- Linux and AIX
- PDF Generator
- AEM Forms IPv6 support
- Connectors for IBM File Net, Documentum, and IBM Content Manager
- Forms, Output, and ConvertPDF services
- AEM Forms on JEE with a Luna HSM cluster
- LDAP Configuration
- Processes with document form variables and digital signatures

- AEMFormsCredentialsandCertificates

3.1. Create the AEM Forms Database

Database configuration requirements

This section describes how to set up the database for use with AEM Forms. This section describes special tables, indexes, and other properties that are required in the AEM Forms database that are not configured by Configuration Manager. The section has instructions for all the supported database; perform the instructions only for your database:

The database will contain these elements:

- AEM Forms services
- AEM Forms run-time configurations
- AEM Forms process data
- Customer process definitions and templates
- Application server managed data

Before you create the database, ensure that you read the pre-installation requirements and have the required software installed.

Create an empty database. All the tables required to support AEM Forms are created when you initialize the AEM Forms database using Configuration Manager.

Minimum database user permissions

Database	Initialization permissions	Runtime permissions
Oracle	CREATE SESSION CREATE TABLE CREATE VIEW CREATE SEQUENCE UNLIMITED TABLE SPACE	CREATE SESSION UNLIMITED TABLE SPACE (only needed if you do not configure user quotas) CREATE TABLE

Database	Initialization permissions	Runtime permissions
MySQL	SELECT INSERT UPDATE DELETE CREATE DROP REFERENCES INDEX ALTER CREATE_TEMP_TABLE LOCK_TABLES	SELECT INSERT UPDATE DELETE
SQL Server - DB level	Create Table Create View Connect	Connect
SQL Server - Schema level	Alter Insert References Select Update Delete	Insert Select Update Delete
DB2	See DB2useraccount for a complete description	See DB2useraccount for a complete description

Creating an Oracle database

If you prefer not to use the default database that was created when you installed Oracle, create a new database by using the Database Configuration Assistant tool.

NOTE: *You can use the Transaction Processing or General Purpose templates while configuring an Oracle database instance for AEM Forms. If you wish to use the Custom Database template for configuring a database instance, the minimum set of database components you must include are* ***Oracle JVM*** *and* ***Enterprise Manager Repository****.*

Do the following when you create your Oracle database:

- Set the initial database size to a minimum of 500MB. Increase this initial size if you are deploying Content Services.
- Create user quotas to allow the database to grow to accommodate persistent data from applications.
- Enable support for UTF-8 encoding.
- Set the Database Character Set to Unicode (AL32UTF8), and the National Character Set to AL16UTF16 (Unicode UTF-16 universal character set).

- Set NLS_LENGTH_SEMANTICS to BYTE (if required). The database initialization fails if you set any other value.
- You must install Oracle using Transaction Processing and set the connection mode for the server to Dedicated Processing.

User account and rights

Create a new user account on the database and assign it the following system privileges:

- CREATE SEQUENCE
- CREATE VIEW
- UNLIMITED TABLESPACE
- CREATE TABLE
- CREATE CLUSTER
- CREATE SESSION

NOTE: *For deployments on non-Windows operating systems, the username must not exceed eight characters; on Windows, it must not exceed 12 characters.*

You need the following information when you configure the data source on the application server:

- SID (Service ID)
- Username and password of the Oracle user account
- Host name or IP address of the database server
- Oracle LISTENER port number (default is **1521**)

For information about using Oracle, see the appropriate Oracle's user documentation.

Creating an SQL Server database

You can create an SQL Server database that AEM Forms will use to store run-time and configuration data. For information about creating an SQL Server database, refer to the SQL Server documentation.

Create an SQL Server database, and create a user account and assign it DB_OWNER privileges for use when configuring the data source on the application server. For information about creating the database and user, see the SQL Server documentation.

You need the following information when you configure the data source on the application server:

- Database name
- Username and password of the SQL Server user account
- Host name or IP address of the database server
- SQL Server port number

Set up the SQL Server for AEM Forms

Before you create the AEM Forms database, optimize the SQL Server by changing these settings.

Increase memory

The default SQL Server settings do not aggressively allocate memory. This situation significantly affects performance on most deployments of an SQL Server database.

NOTE: *This section is recommended but optional.*

1) Using Microsoft SQL Server Management Studio, connect to the database server where you will host the AEM Forms database.
2) Right-click the database server connection and select **Properties**.
3) Select the **Memory** page and enter a size in the **Minimum Server Memory (in MB)** box that is equal to the size of the free memory on the server.
4) Restart the SQL Server database.

Set the processor priority

On dedicated database servers, which are recommended for production installations of AEM Forms, the SQL Server process is configured so that it does not consume too much of the system CPU resources.

NOTE: *This section is recommended but optional.*

1) Using Microsoft SQL Server Management Studio, connect to the database server where you will host the AEM Forms database.
2) Right-click the database server connection and select **Properties**.
3) Select the **Processors** page and select **Boost SQL Server Priority**.
4) Restart the SQL Server database.

Increase the recovery interval

This setting specifies the amount of time the deployment waits for recovery after a crash. The SQL Server default setting is one minute. Increasing this setting to a larger value improves performance because it causes the server to write changes from the database log to the database files less frequently. This setting does not compromise the transactional behavior; however, it affects the size of the log file that is replayed on startup.

NOTE: *This section is recommended but optional.*

1) Using Microsoft SQL Server Management Studio, connect to the database server where you will host the AEM Forms database.
2) Right-click the database connection and select**Properties**.
3) Select the **Database Settings** page and type 5 in the **Recovery Interval (Minutes)** box.
4) Restart the SQL Server database.

Integrated security

NOTE: *This is an optional configuration.*

If you are using SQL Server integrated security, you can set your SQL Server database to Mixed Mode or Windows Authentication Mode. However, if you are using Windows Authentication Mode, you must configure integrated security on Windows to establish a trusted connection with the SQL Server.

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- For WebSphere, see the Configuring SQL Server database connectivity section in Installing and Deploying AEM forms for WebSphere.

NOTE: *When you run the Configuration Manager after configuring Microsoft SQL Server integrated security, the below error message appears on the DataSource Configuration screen:*

`Database settings failed validation.Note: Windows Authentication on SQL Server will fail the connection test. See documentation for more details.`

You can ignore the error message and continue configuring AEM Forms server.

Sizing your SQL Server database

The default database sizes that SQL Server provides are too small for AEM Forms. Even if the database is set to auto-grow, unintended effects can occur, such as reduced performance when the database grows or the growth begins to fragment the disk. It is best to preallocate the database size at creation to reflect your deployment requirements:

Medium-size deployments: Environments where the LDAP directory has approximately 100,000 users and 10,000 groups. Set Database Data Initial Size to 1GB, and set autogrowth to 250MB.

Large-size deployments: Environments where the LDAP directory has approximately 350,000 users and more than 10,000 groups. Set Database Data Initial Size to 2GB, and set autogrowth to 1GB.

NOTE: *Database growth is always restricted to a certain size. Administrators should monitor the resource usage of the AEM Forms database to ensure that it does not lose its restricted space or the space available on the disks where the database resides.*

Creating the AEM Forms database user, schema, and login

You are now ready to create the AEM Forms database user, schema, and login.

IMPORTANT: *Ensure that you use the SQL_Latin1_General_CP1_CI_AS collation (or the Japanese_CI_AS collation if your database will run in a Japanese environment) when you create the database instance for AEM Forms. Any other collation may cause your database initialization to fail. The collation for your AEM Forms database instance can be different from the collation used when creating the SQL Server database.*

1) Using Microsoft SQL Server Management Studio, click **Server**, and then right-click **Database** and select **New Database**.
2) Enter the database name of your choice.

   NOTE: *The database name is very important, and the name chosen must be consistently used in the following procedures where a reference to* `database_name` *exists.*
3) In the **Database Data Initial Size MB** box, enter the appropriate value:
   - For small development or small production systems, specify 200MB.
   - For larger systems, see SizingyourSQLServerdatabase.
4) In the **Database Data Autogrowth** box, enter 50%.
5) In the **Database Log Initial Size** box, enter the appropriate value:
   - For small development or small production systems, specify 20MB.
   - For larger systems, see SizingyourSQLServerdatabase.
6) In the **Database Log Autogrowth** box, enter 50%.

7) Click **OK** to create the database.

Create the AEM Forms user in SQL Server

In the following procedure, *[database_name]* represents the name you specified when you created your database, and *[database_username]* represents the name you must specify for the new user.

1) Using Microsoft SQL Server Management Studio, connect to the database server where you created the AEM Forms database.
2) Click **Server** > **Security**, and then right-click **Logins** and select **New Login**.
3) Enter the login name*[database_username]*, and then select **SQL Server Authentication**and type a new password.
4) Ensure that **Enforce Password Expiration, User must change password on next login** is also deselected.
5) Leave the default database as **Master**, and click **OK**.
6) Click **Server** > **Databases** > *[database_name]* > **Security**, and then right-click **Schemas** and select **New Schema**.
7) In the **Schema Name** box, type *[database_username]*, and click **OK**.
8) Click **Server** > **Databases** >*[database_name]* > **Security**, and then right-click **Users** and select **New User**.
9) In the New User dialog box, type the login name and username *[database_username]*.
10) Set the default schema to *[database_username]* and click **OK**.

    NOTE: *The schema name should be the same as the [database_username].*
11) Click **Server** > **Databases** > [*database_name*] > **Security**, right-click the *[database_username]* schema, and select **Properties** > **Permissions**.
    a) Click **Search** in Users or Roles and type [*database_username*] and click **OK**.
    b) In the **Explicit** tab, grant the following permissions:
        - Alter
        - Insert
        - Reference
        - Select
        - Update
        - Delete
    c) Click **OK**.
12) Right-click **Server** > **Databases** > [*database_name*], right-click the [*database_username*] schema, and select **Properties > Permissions**.
    a) In the **Explicit** tab, grant Create Table, Create View, and Connect permissions.
    b) Click **OK**.

Associate the AEM Forms user with the database

After you create the AEM Forms user, associate it with the AEM Forms database.

1) Click **Security** > **Logins**, and then right-click *[database_username]* and select **Properties**.
2) In Login Properties, on the General page, set the user's default database to *[database_name]*.
3) Select the **User Mapping** page and, in the Users Mapped To This Login section, verify that *[database_name]* is selected, **User** is set to *[database_username]*, and **Default Schema** is set to *[database_username]*.
4) Ensure that *[database_name]* is selected in the Users Mapped To This Login table, and ensure that **public**is selected in the **Database Role Membership For** *[database_name]* table and then click **OK**.

Set the isolation level for the AEM Forms database

AEM Forms requires a specific isolation level to manage deadlocking. The deadlocking occurs when long-running transactions and numerous shorter reads occur at the same time.

IMPORTANT: *You must set the isolation level for MS SQL Server to avoid deadlocking issues.*

1) Click **Databases**, and then right-click *[database_name]* and select **New Query**.

   NOTE: *[database_name] represents the name you specified when you created your database.*
2) In the Query panel, type the following text:

```
ALTER DATABASE [database_name]
SET READ_COMMITTED_SNAPSHOT ON
GO
```

3) Click **Execute**. A response is displayed in the messages panel.

Creating a DB2 database

Create a DB2 database by running one of the scripts provided in this section. The script is tuned for a system that will use 1GB memory for the database. If your system has less memory dedicated for the database, see the appropriate DB2 documentation for details about configuring your system settings. AEM Forms supports DB2 with WebSphere and WebLogic.

You need the following information when you configure the data source on the application server:

- Database name
- Username and password of the DB2 user account
- Host name or IP address of the database server
- DB2 port number

DB2 user account

AEM Forms requires a dedicated system database account. If the account is the schema owner, no other privileges are required. The schema owner can alter, create, and drop any object in the schema. If the account is not the schema owner, then the ALTERIN, CREATEIN, and DROPIN schema privileges are required. The user will also have to belong to the DB2USERS group.

The DB2 user account needs to have schema owner rights to create tables both at product installation time and system runtime. The application server may add further requirements to the database user and schema due to its internal use of the database.

For information about creating a user account, see the DB2 documentation.

NOTE: *For deployments on non-Windows operating systems, the username must not exceed eight characters; on Windows, it must not exceed 12 characters.*

Create the DB2 database

1) **(Content Services not included)** On the computer that hosts DB2, create a new text file that includes the following DB2 script for your database version.
2) **(Content Services included)** If you are using Content Services with any of the other AEM Forms modules, use the following DB2 script for your database version:

   NOTE: *The following text contains formatting characters for line breaks. When you copy this text to a location outside this document, remove the formatting characters.*

```
-- Create a database, using a custom USERSPACE1 definition
-- Configures the database for typical LC use. For large number of
connections, add:
--     num_remote_apps
-- to the AUTOCONFIGURE section
-- To use: Globally replace (case sensitive) DB_NAME with the name of the
database to be created.
-- Modify the FILE locations based on system configuration
-- Note: The size of the file has to be specified in pages (4K pages in
this case) when used as part of the create database command
create database DB_NAME using codeset utf-8 territory default
USER TABLESPACE MANAGED BY DATABASE USING
(FILE'C:\Db2\DB_NAME\DATA_4K_1.db2' 65553) AUTORESIZE YES
AUTOCONFIGURE using workload_type mixed isolation CS admin_priority
performance apply DB and DBM;
-- Create required buffer pools. Let the DB manage the sizes based on load.
-- Creates 8K pool for LC and 32K for Content Services use
-- LEt DB2 manage the sizes based on usage patterns
connect to DB_NAME;
CREATE BUFFERPOOL DB_NAME_BP8K IMMEDIATE SIZE AUTOMATIC PAGESIZE 65553;
CREATE BUFFERPOOL DB_NAME_BP32K IMMEDIATE SIZE AUTOMATIC PAGESIZE 32768;
ALTER BUFFERPOOL IBMDEFAULTBP IMMEDIATE SIZE AUTOMATIC;
connect reset;
-- Create required tablespaces for tables requiring 8K and 32K pools.
connect to DB_NAME;
-- 8K tablespace used by a number of tables.
-- Note that the majority of data is stored in the 4K tablespace (created
as part of the databse create)
CREATE TEMPORARY TABLESPACE DB_NAME_TEMP_8K IN DATABASE PARTITION GROUP
IBMTEMPGROUP PAGESIZE 65553 MANAGED BY SYSTEM
USING ('C:\Db2\DB_NAME\TEMP_8K') PREFETCHSIZE AUTOMATIC BUFFERPOOL
DB_NAME_BP8K;
-- Start off large enough to allow a reasonable test to run without needing
```

```
to extend the space
-- Should be modified to fit expected usage patterns
CREATE LARGE TABLESPACE DB_NAME_DATA_8K IN DATABASE PARTITION GROUP
IBMDEFAULTGROUP PAGESIZE 65553 MANAGED BY
DATABASE USING (FILE'C:\Db2\DB_NAME\DATA_8K.db2'1G)
PREFETCHSIZE AUTOMATIC BUFFERPOOL DB_NAME_BP8K AUTORESIZE YES
INCREASESIZE 1 G;
-- For Content Services - Size has to change based on anticipated use.
Sample values provided
CREATE TEMPORARY TABLESPACE DB_NAME_TEMP_32K IN DATABASE PARTITION GROUP
IBMTEMPGROUP PAGESIZE 32768 MANAGED BY SYSTEM
USING ('C:\Db2\DB_NAME\TEMP_32') PREFETCHSIZE AUTOMATIC BUFFERPOOL
DB_NAME_BP32K;
CREATE LARGE TABLESPACE DB_NAME_DATA_32K IN DATABASE PARTITION GROUP
IBMDEFAULTGROUP PAGESIZE 32768 MANAGED BY
DATABASE USING (FILE'C:\Db2\DB_NAME\DATA_32K.db2'1G) PREFETCHSIZE
AUTOMATIC BUFFERPOOL DB_NAME_BP32K AUTORESIZE YES INCREASESIZE 1 G;
commit work;
connect reset;
deactivate database DB_NAME;
activate database DB_NAME;
```

3) Make the following changes to the script:
   - Replace the instances of *dbname* and *DBNAME* with the name you want for the AEM Forms database.
   - If you are creating multiple database instances on the same host, create an uniquely named buffer pool (for example, `BP8K_1`) for each database instance, using a buffer pool size such that all will not exceed 10% of total physical memory. For example, on a machine with 1GB of physical memory, the total buffer pool size should not exceed 100MB (“SIZE 100000”).
   - Replace *DB2_root* with the path to the root directory where DB2 is installed.
   - Ensure that no commands include line breaks and each command is terminated by a semi-colon (;).
   - Change `9000` in the following line based on your database size:

     `(FILE'DB2_root\DBNAME_DATA'9000)`

     ***NOTE:** This number specifies the minimum number of pages required to initialize the database. You can also change this number by using the DB2 administration tools after you initialize the database.*

4) Save the text file in a location that DB2 Command Line Processor can access.
5) Open a DB2 command prompt and type the following command to run the script:

   `db2 -tf <path_to_script_file>/<script_file_name>`

Configure DB2 for concurrent usage

1) Open the DB2 Control Center:
   – (Windows) Select **Start > Programs > IBM DB2 > General Administration Tools > Control Center**.
   – (Non-Windows) From a command prompt, enter the command `db2jcc.`
2) In the DB2 Control Center object tree, click **All Databases**.
3) Right-click the database created for AEM Forms products and click **Configuration Advisor**.
4) Follow the steps in the Configuration Advisor wizard and set the following properties:

DB2 Property	Required Value
Workload type	`Mixed`
Average number of SQL transactions per unit of work	Less than 10
Database Administration Priority	Faster transaction performance
Populated Database	Set according to the current state of the database instance. The instance is not populated if it has not yet been initialized by the Configuration Manager.
Isolation Level	`Read Committed`

5) Click **Finish**.

Add a user to the new database

1) Log in to the IBM Control Center.
2) Click *[database_name]* > **User and Group Objects** > **DB Users**.
3) Select **Add User** and select the user.
4) Under Authorities, select **Connect to database**, **Create tables**, and **Database administration authority**, and then select **Apply**.
5) Click **OK**.

Additional DB2 requirements for Content Services

The script provided in step 2 in CreatetheDB2database creates an additional DB2 database page size and sets it to 32KB. If Content Services is not being deployed, the default DB2 database page size of 8KB is acceptable.

Configuring multiple DB2 schemas

When configuring Content Services to run using multiple schemas on a single DB2 database instance, Content Services deployment will succeed on the first node but fail on all subsequent nodes. DB2 is

case-sensitive and expects to receive values in uppercase letters. To avoid this problem, you must add the following JVM argument to your application server:

```
-Dhibernate.default_schema=<schema_name>
```

NOTE: *<schema_name> must be replaced by the schema name in uppercase letters.*

Restore database

You created a backup of the LiveCycle database in a previous section. Restore the LiveCycle database content to the database configured for AEM Forms. Refer to the database vendor's documentation for the exact steps to perform the restore.

You also created a backup of LiveCycle GDS directory, EAR files, CRX Repository, Reader Extension credential file, fonts, Customer installed fonts, Watched folders, Correspondence management assets, and Forms Assets. Move the backup to AEM Forms server.

3.1. Configuring a WebSphere Application Server

This chapter describes how to install and configure the WebSphere Application Server that will host your AEM Forms on JEE installation.

Installing WebSphere

You must install WebSphere Application Server for running AEM Forms on JEE products. For use with AEM Forms on JEE, WebSphere can be installed either as WebSphere Base or as WebSphere ND with one base profile. See the WebSphere documentation to determine which method is best for your system.

Installing a Fix Pack to WebSphere

See the WebSphere support website for Fix Pack installation instructions and to access the WebSphere updates.

JAVA_HOME and PATH environment variables

As part of your WebSphere installation, a Java SDK (JDK) was installed. The `JAVA_HOME` and `PATH` environment variables can point to the JDK where AEM Forms on JEE will be deployed.

Set the JAVA_HOME environment variable (Windows)

1) Select **Start** > **Control Panel**>**System**.
2) Click the **Advanced**tab and click **Environment Variables**.
3) In the System Variables area, click **New**.
4) Type`JAVA_HOME` as the variable name and, as its value, specify the directory where the JDK bundled with WebSphere is installed. For example, type the following path:

   `C:\Program Files\IBM\WebSphere\AppServer\java\8.0`

Set the PATH environment variable (Windows)

1) Select **Start** > **Control Panel**>**System**.
2) Click the **Advanced**tab and click **Environment Variables**.
3) In the System Variables area, select **Path**, click **Edit**, and then append the following text to the beginning of the variable value:

   ```
   %JAVA_HOME%\bin;
   ```

Set the DISPLAY setting (AIX)

- If you are using a Windows machine to access the AIX console, type the following text at the command prompt:

  ```
  export DISPLAY= <IP Address of the Windows machine telnet, or cygwin to Linux machine>:0.0
  ```

  NOTE: *If the DISPLAY setting is not set correctly, the following error occurs when you start Configuration Manager: "No JRE is found...".*

Set the JAVA_HOME environment variable (AIX and Linux)

- Set the `JAVA_HOME` variable for Borne and Bash shells as shown in the following example:

```
JAVA_HOME=/opt/IBM/WebSphere/AppServer/java/8.0
export JAVA_HOME
```

***NOTE:** The specific path varies based on the installation directory you specified and the operating system you are installing on.*

Set the PATH environment variable (AIX and Linux)

- Set the `PATH` variable for Borne and Bash shells as shown in the following example:

```
PATH=$JAVA_HOME/bin:$PATH
export PATH
```

Verify JAVA_HOME environment variables

(Optional) Open a command prompt and run the following command:

```
java -version
```

You should receive a response that displays the Java version installed.

Starting WebSphere Base and accessing WebSphere Administrative Console

Start WebSphere Base

1) If the server is not already running, start the WebSphere Administrative Console, from *[appserver root]*/profiles/<profile_name>/bin, type the appropriate command, replacing **server1** with the name of your server instance:
   – (Windows) `startServer.bat`**server1**
   – (AIX and Linux) `./startServer.sh`**server1**

Access the WebSphere Administrative Console

1) Start the WebSphere Application Server.
2) In the address bar of a web browser, type the appropriate URL:

```
http://[host name]:[port]/ibm/console
```

If you are logged into the server that you are currently using, you can replace *[hostname]* with `actual IP address or hostname`. The port value depends on the application server and whether Administrative Security is enabled. The default port value for WebSphere is 9060. If Administrative Security is enabled, the default SSL port value is 9043.

1) If WebSphere Administrative Security is enabled, type the WebSphere user ID and password in the boxes provided.
2) Click **Log In**.

Starting WebSphere ND and accessing WebSphere Administrative Console

1) Open a command prompt and navigate to *[WebSphere ND root]*/profiles/Dmgr01/bin.
2) **(Windows)** Run `startManager.bat`.
   (AIX and Linux) *Run `startManager.sh`.*
3) Navigate to *[WebSphere ND root]*/profiles/*[profile name]*/bin and run `startNode.bat`.
4) Once the services have started, connect to the server by typing the URL `http://[host name]:[port]/ibm/console` in the address bar of a web browser.
5) If WebSphere Administrative Security is enabled, type the WebSphere user ID and password in the boxes provided and click **Log In**.
6) In the navigation tree of the WebSphere Administrative Console, click **Servers > Server Types > WebSphere application servers**.
7) Select the listed server and click **Start**. Notice that the server status changes as the server is started.

Directory permissions

The AEM Forms on JEE application will extract files to the *[appserver root]*/installedApps directory. Therefore, it is important that writable permissions be given to that directory. If writable permissions cannot be given, the section below describes how to modify the location for the extracted files.

NOTE: *It is recommended that you modify the location of the extracted files to [appserver root]/profiles/<profile_name>/installedApps.*

Modify the location for the extracted files

1) Log in to the WebSphere Administrative Console.
2) Click **Servers** > **Server Types** > **WebSphere Application servers** and click your server name, such as **server1**.
3) Under Server Infrastructure, click **Java and forms workflow**>**Process Definition**.
4) Under Additional Properties, click **Java Virtual Machine** and then click **Custom Properties**.
5) Click **New** and create a custom property named `adobeidp.RootDirectory`.
6) Set the value of `adobeidp.RootDirectory` to the path where Adobe native files should be extracted, such as *[appserver root]*/profiles/*<profile_name>*/installedApps.
7) Click **OK** or **Apply**.
8) In the Messages box, click **Save directly to master configuration**, and then restart the application server.

Preparing WebSphere Application Server

This section describes how to prepare and configure an application server instance for your AEM Forms on JEE deployment.

Increase the SOAP request time out

1) Go to the *[appserver root]* directory and search for all files named soap.client.props. Multiple files may have this name. For example, on an AIX and Linux server, the following files exist:
   - *[appserver root]*/profileTemplates/default/documents/properties/soap.client.props
   - *[appserver root]*/profileTemplates/management/documents/properties/soap.client.props
   - *[appserver root]*/profiles/<profile_name>/properties/soap.client.props
   - *[appserver root]*/profiles/<profile_name>/temp/soap.client.props
2) Open each soap.client.props file in a text editor, find the `com.ibm.SOAP.requestTimeout` property, and change the value from `180` to `1800`.
3) Save and close each soap.client.props file.
4) In the navigation tree of the WebSphere Administrative Console, click **Servers** > **Server Types** > **WebSphere Application servers** and, in the right pane, click the server name.
5) Under Server Infrastructure, click **Administration**>**Administration Services**.
6) Under Additional Properties, click **JMX Connectors**, and then click **SOAPConnector**.
7) On the next screen, click **Custom properties**, and then click **requestTimeout**.
8) If necessary, change `600` to `1800` in the **Value** box on the next screen. Click **OK** or **Apply**.
9) In the **Messages** box, click **Save directly to master configuration**.

NOTE: *For deploying Content Services, the special setting* `-Dhibernate.dialect=org.hibernate.dialect.DB2Dialect` *is required for the WebSphere Application Server and IBM DB2 64-bit database combination. This setting is required only when there are multiple schema on the same DB2 instance.*

Increase the Deployer heap size

You must increase the heap size in the `ejbdeploy.bat/sh` script to avoid time-out errors.

NOTE: *The ejbdeploy.bat/sh script is not installed by default. Therefore, you must install it separately to avoid errors during installation. For more information about adding the script, see EJBDeploy - Optional-featureinWebSphereApplicationServerVersion8.*

AIX and Linux

1) Go to the *[appserver root]*/deploytool/itp/ directory and open `ejbdeploy.sh` for editing.
2) Add the heap size parameter at the end of the `JAVA_CMD \` section:
   `-Xms256m -Xmx4096M`
3) Save and close the file.

Windows

1) Go to *[appserver root]*\deploytool\itp and open the ejbdeploy.bat file in a text editor.
2) Find the line beginning with %JAVA_HOME% and then find the argument `-Xmx`.

3) Change the argument to `-Xmx512M`.

1) Save and close the file.

Configure inbound and outbound communication

NOTE: *Perform these steps only if you have Global Security enabled on your WebSphere application server.*

1) In WebSphere administration console, navigate to **Security > Global Security**.
2) In the Authentication section, click **RMI/IIOP security**.
3) Click **CSIv2 inbound communication** and set **Transport**to **SSL-supported**. Click **OK**.
4) In the Messages box, click **Save directly to master configuration**.
5) Click **CSIv2 outbound communication** and set **Transport**to **SSL-supported**.
6) Click **OK**.
7) In the Messages box, click **Save directly to master configuration**. Click **OK**.

Configuring the AEM Forms on JEE database connectivity

Next, configure the database connectivity and install AEM Forms on JEE by following the instructions provided in Installing and DeployingAEMformsonJEEforWebSphere.

Configuring WebSphere Application Server if global security is enabled

If your installation uses global security, you must run WebSphere Application Server as a user with the appropriate roles. You can employ one of the following options to configure WebSphere Application Server to run if WebSphere global security is enabled:

- Create a new user with the necessary roles, and run WebSphere Application Server as that user. If a user already exists to run WebSphere Application Server, assign the necessary roles to that user.

  IMPORTANT: *Ensure that you start WebSphere Application Server as this user. Some WebSphere processes may fail if you start WebSphere Application Server as a different user while global security is enabled.*

  In a secure environment, it is recommended that you employ this option.
- Configure the EVERYONE group with the necessary roles.

To create a new WebSphere Application Server user:

1) In the WebSphere Administrative Console navigation tree, click **Environment** > **Naming** > **CORBA Naming Service Users**, and then in the right pane, click **Add**.
2) In **Roles**, select all the roles.
3) Under Search and Select Users, select the User Realm.
4) In the search box, type the search string and click **Search**. ***NOTE:*** *To retrieve all users, type an asterisk (*).*
5) From the Available text box, select the required users and click the right arrow to add them to the Mapped to role box.

6) Click **Save directly to master configuration**.

To configure an existing WebSphere Application Server user:

1) In the WebSphere Administrative Console navigation tree, click **Environment** > **Naming**> **CORBA Naming Service Users**, and then in the right pane, select the user.
2) In **Roles**, select the required roles.
3) Click **OK**or **Apply**.
4) Click **Save directly to master configuration**.

To configure the EVERYONE group

1) In the WebSphere Administrative Console navigation tree, click **Environment** > **Naming** > **CORBA Naming Service Groups**.
2) In **Roles**, select the required roles.
3) Enable **Select from special subjects**, and then from the Special subjects list, select the **EVERYONE** group.

NOTE: *If the EVERYONE group is already configured, the group will not be shown in the Special subjects list. You only need to assign the required roles to this group if not already done so.*

1) Click **OK**or **Apply**.
2) Click **Save directly to master configuration**.

Configure CSIv2 inbound transport

On the default Global Security enabled installation of IBM WebSphere, CSIv2 inbound transport option is set to SSL-required. This configuration causes Output and Forms components to fail. Ensure that you change CSIv2 inbound transport option to SSL-Supported: To change the option:

1) Log in to IBM WebSphere administration console.
2) Expand **Security**, and then click **Global security**.
3) In the Authentication section, expand **RMI/IIOP security**, and then click **CSIv2 inbound communications**.
4) In CSIv2 Transport Layer section, set value of **Transport** to **SSL-Supported**.
5) Click **Apply**.

NOTE: *After enabling global security and configuring appropriate roles for Application server, additional configurations are required to enable OSGi functionality built within the JEE stack. These configurations are performed after installing and configuring AEM Forms on JEE on WebSphere application server. For detailed steps, see* [*Enable WebSphere Global Administrative Security*](#)**.**

4. Installing AEM Forms modules

4.1. Before you begin

Checking the installer

Observe the following best practices with the installer files before you begin the installation process.

Check the downloaded files

If you downloaded the installer from the Adobe website, verify the integrity of the installer file using the MD5 checksum. Do one of the following to calculate and compare the MD5 checksum of the downloaded file with the checksum published on the Adobe licensing website:

- **Linux:** Use the `md5sum` command
- **Windows:** Use a tool such as WinMD5
- **AIX:** Use the `md5sum` command

Expand the downloaded archive files

If you downloaded the ESD from the Adobe website, extract the entire aemforms_server_6_4_0_websphere_all_win.zip (Windows) or aemforms_server_6_4_0_websphere_all_unix.tar.gz (AIX or Linux) archive file to your computer. For non-Windows, use the `gunzip` command to extract the .gz file.

NOTE: Be sure to keep the directory hierarchy unchanged from the original ESD file.

4.2. Installation considerations

Installation paths

To successfully install, you need read, write, and execute permissions on the installation directory. The following also apply to the installation paths:

- When installing AEM Forms on JEE, do not use double-byte or extended Latin characters (such as àâçéèêëîïôùûÄÖßÜ) in the installation path.
- On Windows, the AEM Forms on JEE installation directory path must not contain any non-ASCII characters (for example, international characters such as é or ñ).

- On UNIX-based systems, you must be logged in as the root user to successfully install the modules. If you are logged in as a non-root user, change the installation directory to one on which you have permissions (read-write-execute privileges).
- On Windows, you must have administrator privileges to install AEM Forms on JEE.
- When you run the AEM Forms on JEE installer, you should run it as the same user that installed WebSphere Application Server.

Temporary directories

Temporary files are generated in the temp directory. In certain instances, the generated temporary files may remain after the installer is closed. You can remove these files manually.

When installing on Linux, the installation program uses the logged-in user's home directory as a temporary directory for storing files. As a result, messages such as the following may appear in the console:

```
WARNING: could not delete temporary file /home/<username>/ismp001/1556006
```

When you complete the installation, you must manually delete the temporary files from the following directories:

- (Windows) TMP or TEMP path as set in the environment variables
- (AIX or Linux) Logged-in user's home directory

On UNIX-based systems, a non-root user can use the following directory as the temporary directory:

- (Linux) /var/tmp or /usr/tmp
- (AIX) /tmp or /usr/tmp

Installing on a Windows staging platform for Linux or UNIX

AEM Forms on JEE can be installed and configured on Windows for deployment on a Linux or UNIX platform. You can use this functionality for installing on a locked-down Linux or UNIX environment. A locked-down environment does not have a graphical user interface installed. For the Linux or UNIX platform, the installation program installs binaries that are used by Configuration Manager to configure the product.

The computer running Windows can then be used as a staging location for the deployable objects, which can be copied to a Linux or UNIX computer for deployment to the application server. The application server on the Windows-based computer, and the Linux or UNIX target computer on which you want to install AEM forms on JEE must be the same.

General installation notes

- On Windows, improve the speed of installation by disabling any on-access virus scanning software during installation. For details, see Using an antivirus on server running AEMForms.
- If you are installing on UNIX-based systems and are not installing directly from a release DVD, set executable permissions on the installation file.

- To avoid permission issues during deployment, ensure that you run the AEM Forms on JEE installer and Configuration Manager as the same user who will run the application server.
- If you are installing on UNIX-based computers, the installation directory you specify should not contain any spaces.
- Ensure that the JAVA_HOME environment variable points to *[appserver root]*/java/.
- When configuring WebSphere on Windows, make sure that Configuration Manager is running using the appropriate JDK. WebSphere installations typically use the IBM JDK. If WebSphere is not using the IBM JDK, re-launch Configuration Manager using the *[aem-forms root]*/configurationManager/bin/ConfigurationManager.bat script.
- If errors occur during installation, the installation program creates the install.log file, which contains the error messages. This log file is created in the *[aem-forms root]*/log directory.

4.3. Installing AEM Forms on JEE

1) Start the installation program:
   - (Windows) Navigate to the \server\Disk1\InstData\Windows_64\VM directory on the installation media or folder on your hard disk where you copied the installer. Right-click the `install.exe` file and select Run as administrator.
   - (Non-Windows) Navigate to the appropriate directory, and from a command prompt, type `./install.bin`.
     - (AIX) /server/Disk1/InstData/AIX/NoVM
     - (Linux) /server/Disk1/InstData/Linux/NoVM
2) When prompted, select the language for the installation to use and click **OK**.
3) On the Introduction screen, click **Next**.
4) If you have a previous version installed on the computer where you are running the installer, the Preparation for Upgrade screen appears. Select the **Install Adobe Experience Manager Forms** option on the screen.

   NOTE: *If you are performing an out-of-place upgrade on a new machine, this screen is not shown. Select **Next** to continue.*
5) On the Choose Install Folder screen, accept the default directory or click **Choose** and navigate to the directory where you intend to install AEM Forms on JEE, and then click **Next**. If you type the name of a directory that does not exist, it is created for you.

   Click Restore Default Folder to restore the default directory path.
6) **(Windows only)** On the Manual Installation Options screen, select the target deployment option and click **Next**:
   - **Windows (Local):** Select this option if you are installing and deploying AEM Forms on JEE on the local server.
   - **Staged (Installed on Windows, targeting remote systems):** Select this option if you plan to use Windows as a staging platform for your deployment and then select the target operating system on the remote server. You can select a UNIX operating system as the target for deploy-

ment even if you are installing on Windows. (See *Installing on a Windows staging platform for Linux or UNIX*.)

7) Read the AEM Forms on JEE License Agreement, select **I accept** to accept the terms of the license agreement, and then click **Next**. If you do not accept the license agreement, you cannot continue.
8) On the Pre-Installation Summary screen, review the details and click **Install**. The installation program displays the progress of the installation.
9) Review the Release Notes information and click **Next**.
10) Review the details on the Install Complete screen.
11) The **Start Configuration Manager** checkbox is selected by default. Click **Done** to run the Configuration Manager.

4.4. Next steps

You must now configure AEM Forms on JEE for deployment. You can also choose to run Configuration Manager later by using the ConfigurationManager.bat or ConfigurationManager.sh file located in *[aem-forms root]*\configurationManager\bin.

5. Configuring AEM Forms on JEE for Deployment

5.1. Considerations when configuring and deploying AEM Forms on JEE

General Considerations

- While configuring, you must provide the location of the JDBC drivers for your database. Oracle and SQL Server drivers are in the*[aem-forms root]*/lib/db/*[database]* directory. You can download IBM DB2 driver from IBM website. For the complete list of Supported Driver Versions and download locations, see Supported Platform Combination.
- Temporary directory: It is recommended to use local directory as a temporary directory. The temporary directory should exist on every node of the cluster and the path of the temporary directory must be same for every node in the cluster.
- On cluster environments, several steps need to be performed manually in addition to the automatic configuration that Configuration Manager performs.

Considerations for WebSphere application server

- Configuration Manager does not support deployment or undeployment of EAR files with custom file names. If your EAR files use a custom file name, you must manually deploy and undeploy them to the application server.
- If you are using the same application server instance for your upgraded environment, you must first manually undeploy the existing EAR files from the application server instance.
- If you are deploying components to WebSphere on a localized instance of Windows operating system, Configuration Manager deployment process reaches approximately 7% completion and then adobe-livecycle-websphere.ear fails to deploy. You must perform additional steps described in the Miscellaneous Errors section of the adobe-livecycle-websphere.ear fails to deploy article.
- If you are installing in a distributed environment to a secured server, you will encounter SSL handshake exceptions when running Configuration Manager. To avoid this error, run the following executable file before running Configuration Manager: *[appserver root]*/bin/retrieveSigners.bat. The retrieveSigners utility retrieves the certificates from the WebSphere Deployment Manager server and adds them to the local server's trust store. See Retrieving signers using the retrieve Signersutilityattheclient on IBM Information Center.

- Some Configuration Manager screens require you to provide the SOAP port of the application server or the deployment manager. For more information on how to determine SOAP ports of your WebSphere application server, see blog http://blogs.adobe.com/livecycledocs/?p=243.
- If you are configuring a remote application server, ensure that an application server is also installed on the computer where you run Configuration Manager so that it can use the application server library files. In an environment where a remote application server is installed on Linux or AIX and AEM Forms on JEE is installed on Windows environment, copy the appropriate database driver from [aem-forms root]\lib to the [appserver root]/universalDriver/lib folder of the remote server.
- You can determine the JNDI port number by logging in to WebSphere Administrative Console and navigate to Servers > Server Types > WebSphere application servers > [server name] > Communications > Ports. You will need to provide a value for BOOTSTRAP_ADDRESS when you configure the application server using Configuration Manager.

Considerations while configuring AEM Forms on JEE Server Clusters

- It is recommended to have local server fonts and customer fonts directories at the same path on each node in the cluster. Shared fonts directories instead of local fonts directories may cause performance issues.

5.2. Pre-configuration tasks for upgrade

1) If you did not start Configuration Manager automatically from the installation program, navigate to the *[aem_forms root]*/configurationManager/bin directory and run the ConfigurationManager.bat/sh script.
2) If prompted, select a language and click **OK.**
3) If you are prompted to use existing configuration data, click **OK**.
4) On the Welcome screen, click **Next**.
5) On the Upgrade Task Selection screen, select the Upgrade from Adobe Experience Manager Forms 6.2.0 option and click **Next** to continue.

   NOTE: Upgrade from Adobe Experience Manager Forms 6.2.0 option allows you to upgrade from LiveCycle to AEM 6.4 Forms.
6) On the Modules screen, select the modules you plan to configure and deploy and click **Next**.

   NOTE: *You must install and deploy as many or more modules than those on your existing system.*

   NOTE: Some modules have technical dependencies on other modules for proper configuration and functioning. Configuration Manager displays a dialog and does not allow to proceed further if mutually dependent modules are not selected.
   - In AEM Forms, adaptive forms, Correspondence Management, HTML5 Forms, forms portal, HTML Workspace, Process Reporting, and Forms centric workflows on OSGi capabilities use crx-repository. If you plan to use these capabilities, you require crx-repository.
   - You do not require crx-repository for AEM Forms Document Security.
7) On the Task Selection screen, select the tasks you want to perform and click **Next**.

NOTE: *You must select the Initialize AEM Forms Database option when you are upgrading. Also, make sure that you perform all tasks sequentially, without skipping any, to avoid upgrade issues.*

8) On the Pre-upgrade Steps and Pre-upgrade Steps Contd screens, review the requirements and perform all tasks relevant to your environment and click **Next**.

5.3. Configuring and deploying AEM Forms on JEE

Configuring AEM Forms

On the Configure Adobe Experience Manager Forms (2 of 5) screen, click **Next** to accept the default directory locations, or click **Browse** to navigate to and change the directories that Adobe Experience Manager Forms will use to access fonts, and then click **Next**.

TIP: *Click **Edit configuration** to change any values on this screen. This button is not available when the Configuration Manager is run for the first time, but is available on the second and subsequent runs of the Configuration Manager.*

- (Optional) To change the default location of the **Adobe server fonts directory**, type the path or browse to the directory.
- To change the default location of the **Customer fonts directory,**click **Browse** or specify a new location for your customer fonts.

  NOTE: Your right to use fonts provided by parties other than Adobe is governed by the license agreements provided to you by such parties with those fonts, and is not covered under your license to use Adobe software. Adobe recommends that you review and ensure that you are in compliance with all applicable non-Adobe license agreements before using non-Adobe fonts with Adobe software, particularly with respect to use of fonts in a server environment.
- (Optional) To change the default location of the **System fonts directory**, type the path or browse to the directory. To add more directories to the list, click **Add**.
- (Optional) To enable FIPS, ensure that **Enable Federal Information Processing Standards (FIPS) 140-2 cryptography** is selected. Select this option only if you require the Federal Information Processing Standards (FIPS) to be enforced.

1) On the Configure Adobe Experience Manager forms(1 of 5) screen, click **Configure** and click **Next** when done.
2) On the Configure Adobe Experience Manager Forms (2 of 5) screen, click **Next** to accept the default directory locations, or click **Browse** to navigate to and change the directories that AEM Forms will use to access fonts, and then click **Next**.

   TIP: *Click **Edit configuration** to change any values on this screen. This button is not available when the Configuration Manager is run for the first time, but is available on the second and subsequent runs of the Configuration Manager.*

   – (Optional) To change the default location of the **Adobe server fonts directory**, type the path or browse to the directory.

   – To change the default location of the **Customer fonts directory,**click **Browse** or specify a new location for your customer fonts.

NOTE: Your right to use fonts provided by parties other than Adobe is governed by the license agreements provided to you by such parties with those fonts, and is not covered under your license to use Adobe software. Adobe recommends that you review and ensure that you are in compliance with all applicable non-Adobe license agreements before using non-Adobe fonts with Adobe software, particularly with respect to use of fonts in a server environment.

- (Optional) To change the default location of the **System fonts directory**, type the path or browse to the directory. To add more directories to the list, click **Add**.
- (Optional) To enable FIPS, ensure that Enable **FIPS** is selected. Select this option only if you require the Federal Information Processing Standards (FIPS) to be enforced.

3) Click **Browse** on the Configure Adobe Experience Manager forms (3 of 5) screen to specify the**Location of the temporary directory**, and then click **Next**.

   NOTE: Ensure that the temporary directory is on the local file system. AEM Forms does not support a temporary directory at a remote location.

   NOTE: If you do not specify the temporary directory, the default system-configured temp location is used. The temporary directory must exist on every node of the cluster and path of the temporary directory must be same on every node of the cluster.

4) On the Configure Adobe Experience Manager Forms (4 of 5) screen, click **Browse** to specify the path for the Global Document Storage (GDS) directory, and then click **Next**.. ***NOTE:*** *Point to the existing GDS directory or copy its contents to the newly specified location.*

5) On the Configure Persistent Document Storage (5 of 5) screen, select the option for persistent document storage in addition to the GDS directory. For upgrade, you should select the option used in the previous version:
   - **Use GDS**: Use the file system-based GDS for all persistent document storage. This option provides the best performance, and a single location for GDS.
   - **Use database**: Use the AEM Forms database for storing the persistent documents and long-lived artifacts. However, the file-system based GDS is also required. Using the database simplifies backup and restore procedures.

   *Click **Configure** to configure the AEM Forms EARs with this directory information and, after the configuration is complete, click **Next**.*

Configure your database

- On the Adobe Experience Manager Forms Database screen, provide the information about the instance of AEM Forms on JEE database, so that Configuration Manager can connect to it.

  *Click **Verify Connection** to ensure that the information is valid and Configuration Manager can connect to the database, and then click **Next** to continue.*

  NOTE: Ensure that the JDBC driver points to the correct database driver located inside `[aem-forms root]/lib/db/<database>` directory. If you are upgrading on a machine with a previous version of installation and are reusing the old configuration data, then the JDBC driver is pre-populated with the old incompatible driver jar from the previous installation. Select any other database in the Database Type list and re-select the desired database.

Configure CRX

1) The CRX Configuration screen allows you to configure the CRX repository and install it into the adobe-livecycle-cq-author.ear EAR file.
   a) Specify the path to the repository. The default location is *[aem-forms root]*/crx-repository.

      NOTE: Ensure that the CRX repository path does not contain spaces and the content repository is available on all the nodes of the cluster. After the configuration is complete, copy the content repository from local node to all the nodes on the same location (as specified on the CRX configuration screen). Copy the datastore folder (backed up during preparing system for upgrade) to all the nodes on the same location, also.
   b) If you are upgrading from your existing repository, specify path of the crx-repository copied from the previous version.
   c) Select the repository type, as appropriate and keep a note of the following points:
      - CRX3 TAR is not supported in clustered deployments.
      - If selecting CRX3 Mongo DB, specify the Mongo database name and URL to the database. The format of the URL is: `mongodb://<HOST>:<Port>`.

        HOST: IP address of the machine running MongoDB.

        Port: Port number used for the MongoDB. The default port number is 27017.
      - Selecting this option sets the CRX repository persistence to RDB MK (document MK) .

      NOTE: If you have already upgraded to AEM 6.4 Forms and you are running configuration manager to add/remove modules, then ensure that the CRX repository type option matches the option selected while performing the upgrade.
   d) Click **Configure** to create the required repository files at the specified location.

   NOTE: *If your AEM Forms on JEE server is running remotely, select* ***Server is running on remote host****, and specify the path to the repository on the remote host.*

   Click ***Next*** *to continue.*

   NOTE: Once the packages are configured, you cannot remove them by re-running the Configuration Manager. For clean uninstallation of deployed packages, you need to uninstall and delete the packages using Package Manager.

(Remote host only) CRX Configuration Summary

1) For a remote deployment, copy the content from the [*aem-forms root*]/configurationManager/export/crx-quickstart/ directory to the location on the remote host you specified on the CRX Configuration screen.

   NOTE: In case of clustered deployment, you must copy the content from the [aem-forms root]/configurationManager/export/crx-quickstart/ directory to the specified location on all cluster node hosts.

Configuring Acrobat for PDF Generator

1) **(Windows only)**On the Configure Acrobat For PDF Generator screen, click **Configure** to run the script that will configure Adobe Acrobat and required environment settings. Click **Next** when complete. ***NOTE:*** *This screen will perform the desired configuration only when Configuration Manager is running locally. You must have Adobe Acrobat DC Pro already installed or this step will fail.*

Configuration Summary

1) On the Configure Adobe Experience Manager forms Summary screen, click **Next**. Configured archives are placed in the *[aem-forms root]*/configurationManager/export directory.

Configuring your application server and database

1) On the Application Server Configuration Details screen, provide the information for the fields (all fields are mandatory) and then click **Verify Server Connection**. When the verification has completed successfully, click **Next**.

   NOTE: If WebSphere Administrative Security is off, Admin User ID and Password fields can be left blank.

   NOTE: When using WebSphere Cluster or WebSphere Network Deployment server to configure a standalone WebSphere Application server, enter the port number of the deployment manager in the SOAP Port field.

   NOTE: If you are using non-default WebSphere profile, ensure that you provide the complete path, including the profile name, in the Local Application Server Root Directory field.
2) On the Application Server Configuration Selection screen, select the tasks for Configuration Manager to perform, and click **Next**.
3) On the Server Settings Configuration screen *(appears only if Configure Server Settings was selected)*, provide the information for the fields, and then click **Next**.
4) On the Datasource Configuration screen *(appears only if Configure Datasource option is selected)*, provide the information for the fields and then click **Test Database Connection**. When the connection is tested successfully, click **Next**.

   You can choose to manually configure data sources rather than allowing Configuration Manager to configure them for you. To override automatic data source configuration, select ***Manually configure data source in the WebSphere Administrative Console before continuing****, at the bottom of the screen.*

   Without exiting Configuration Manager, go to the application server administration console, and configure data sources as described in Configuring the AEM Forms database connectivity in Installing AEM forms on JEE for WebSphere Server Guide.

   NOTE: By default, Configuration Manager creates datasources at node level. To set the datasource at the server level, see how to create a JDBC provider for your database in in the Installing AEM Forms on JEE for WebSphere Server Guide.

5) On the Application Server Configuration screen, click **Configure**. When the process is completed, click **Next**.

6) If you have enabled SSL, perform the following steps. These steps change "http" to "https" in the integration URL:

   a) Open Webspehere console. The default URL is [host]:<ibm_admin_port>/ibm/console.

   b) Navigate to Servers > Server Types > Websphere Application Server and select server. For example Server1.

   c) In Server Infrastructure, select Java and Process Management . Click Process Definition. In Additional Properties, select Java Virtual Machine

7) On the Application Server Configuration Validation screen, select the tasks for validating and then click **Validate** and select Yes on prompt to deploy adobe-lcm-lcvalidator.ear. When the process is completed, click **Next**.

Deploying AEM Forms on JEE EARs

1) **(In-place upgrade only)** On the Undeploy AEM Forms on JEE EARs from the application server if doing in-place upgrade screen., review the information, perform the required task, and then click **Next**.

2) On the Deploy Adobe Experience Manager Forms EARs screen, select the EAR files to deploy, and then click **Deploy**. This operation may take several minutes to complete. When the deployment has completed successfully, click **Next**.

   NOTE: If the deployment of EARs fails with the error – The system failed to make the SOAP RPC call: invoke – increase the SOAP timeout value as described in Modifying the WebSphere time-out settings section and then deploy the EARs.

   NOTE: *When Configuration Manager has started the execution of the IBM WebSphere® JACL deployment scripts, you cannot stop the deployment even if you exit or cancel Configuration Manager prior to deployment completion. No user action is required because the product EARs will be successfully deployed.*

   By default, Configuration Manager deploys the EAR files to the WebSphere default virtual host, `default_host`*. To deploy the EAR files to a different virtual host, select the target host from the Virtual Host list.*

   To connect to the application server using a secure port while running Configuration Manager, do the following tasks:

   a) Copy the [appserver root]\java_<version>\jre\lib\security\java.security file to another folder on the same machine.

   b) Open the copied java.security file for editing.

   c) Uncomment the following lines:

      ```
      ssl.SocketFactory.provider=com.ibm.jsse2.SSLSocketFactoryImpl
      ssl.ServerSocketFactory.provider=com.ibm.jsse2.SSLServerSocketFactoryImpl
      ```

   d) Comment the following lines:

ssl.SocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLSocketFactory
ssl.ServerSocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLServerSocketFactory

e) Save and close the file.

f) Exit the Configuration Manager.

g) Open the [aem-forms root]\Adobe_Experience_Manager_Forms\configurationManager\bin\ConfigurationManager.bat for editing.

h) Add the following argument to the JAVA_OPTS property:

-Djava.security.properties=<path of the copied java.security file>

i) Run the Configuration Manager using the ConfigurationManager.bat file and continue from the Adobe Experience Manager Forms Database Initialization screen.

NOTE: If you encounter the error message listed below, ignore the error message and continue with configuring AEM Forms.

```
ERROR [stderr] (http-/0.0.0.0:8080-4)
com.adobe.idp.common.errors.exception.IDPException|
[com.adobe.idp.storeprovider.jdbc.DBStatement] errorCode:12552
errorCodeHEX:0x3108
```

NOTE: You have to manually deploy adobe-livecycle-author.ear after configuring AEM Forms and upgrading the repository.

Initializing AEM Forms on JEE database

1) On the Adobe Experience Manager forms Database Initialization screen, verify that the hostname and port number provided for your application server is correct and then click **Initialize**. The database initialization task creates tables in the database, adds default data to the tables, and creates basic roles in the database. When the initialization has completed successfully, click **Next**.

NOTE: *Before continuing with the next steps, wait until the ServiceEvent REGISTERED and ServiceEvent UNREGISTERED messages stop appearing in the <crx-repository>/error.log file. Depending on network and database response speed, it might take a few hours for RDBMK to be up and running.*

NOTE: *Do not skip this step or the upgrade will fail. This process does not harm the existing data.*

Restart the application server manually if you are prompted to do so.

2) On the Adobe Experience Manager forms Information screen, enter **Adobe Experience Manager forms User ID** and **Password** whose default values are *administrator* and *password* respectively.

As you are upgrading to AEM Forms on JEE, enter the administrator password of your previous LiveCycle installation.

NOTE: Before verifying the connection to the server, verify that AEM is up and running. If AEM is not up and running and the server is restarted, it may lead to the corruption of repository data. Perform the following steps to verify that AEM is up and running:

a) Watch the error.log file for activity. Ensure that it is stable and no more action is performed. The default path of the error.log file is <aem-forms_root>/crx-repository/logs/error.log.

b) In the browser window, open URL http://[host]:[port]/lc/system/console/bundles, and ensure that only one bundle is in the installed state.

*Click **Verify Server Connection**, and when complete, click **Next**.*

NOTE: If the server verification fails, restart the server but only when error.log gets stable and http://[server]:[port] /lc is accessible. If the verification fails yet again, restart the server again.

NOTE: The server information that appears on this screen represents default values for the deployment.

Verifying the server connection helps narrow troubleshooting in case failures occur in the deployment or validation. If the connection test passes but deployment or validation fails in the next few steps, connectivity issues can be eliminated from the troubleshooting process.

Session ID Migration Errors

View and fix the errors that were encountered while migrating session IDs from you old instance of LiveCycle, and then click Next. It is important to fix these errors else you may encounter some failed workflow invocations post-upgrade.

Deploying AEM Forms on JEE components

1) On the Adobe Experience Manager forms Component Deployment screen, click **Deploy**. The components that are deployed at this time are Java archive files that plug into the service container that is part of AEM Forms on JEE for purposes of deploying, orchestrating, and executing services. When the deployment has completed successfully, click **Next**.

2) On the Adobe Experience Manager forms Component Deployment Validation screen, click **Validate**. Click **View Progress Log** to view the validation progress and, when the validation has completed successfully, click **Next**.

Migrate data

1) On the Migrate Data Essential to Adobe Experience Manager forms Operation screen, click **Start**and, when the migration is complete, click **Next**.

Configuring AEM Forms components

1) On the Configure Adobe Experience Manager Forms Components screen, select the tasks to run with Configuration Manager, and click **Next**. ***NOTE:** If you are upgrading any Connectors for ECM*

module, do not select them on this screen. Only include them if you are licensing them for the first time in AEM Forms and proceed with the following steps as appropriate.

Configure Connector for EMC Documentum®

NOTE: In case of a remote AEM Forms on JEE deployment, you cannot configure the Connector for EMC Documentum using Configuration Manager.

1) On the Specify Client for EMC Documentum screen, select **Configure Connector for EMC Documentum Content Server**, and specify the following settings. Enter the details, click **Verify**, and when complete, click **Next** to continue.
   - **Choose EMC Documentum Client Version:**Select the client version to use with the EMC Documentum Content Server.
   - **EMC Documentum Client Installation Directory Path:**Click **Browse** to select the directory path.
2) On the Specify EMC Documentum Content Server Settings screen, enter the EMC Documentum Server details, and then click**Next**. Press F1 for information about the details you need to enter.
3) On the Configure Connector for EMC Documentum screen, click **Configure Documentum Connector**. When completed, click **Next**.
4) On the Required Manual Configurations for Connector for EMC Documentum screen, review and perform the manual steps listed and then click **Next**.

Configure Connector for IBM® Content Manager

NOTE: In case of a remote AEM Forms on JEE deployment, you cannot configure the Connector for IBM Content Manager using Configuration Manager.

1) On the Specify Client for IBM Content Manager screen, select **Configure Connector for IBM Content Manager**, and enter a value for the IBM Content Manager Client Installation Directory Path. Click **Verify** and when complete, click **Next** to continue.
2) On the Specify IBM Content Manager Server Settings screen, enter the details of the IBM Content Manager Server, and click **Next**.
3) On the Configure Connector for IBM Content Manager screen, click **Configure IBM Content Manager Connector**. When complete, click **Next**.
4) On the Required Manual Configurations for Connector for IBM Content Manager screen, review and perform the manual steps listed and then click **Next**.

Configure Connector for IBM® FileNet

NOTE: In case of a remote AEM Forms on JEE deployment, you cannot configure the Connector for IBM FileNet using Configuration Manager.

NOTE: Make sure your ECM is upgraded according to supported versions.

1) On the Specify Client for IBM FileNet screen, select **Configure Client for IBM FileNet Content Manager**, and specify the following settings.
   - **Choose IBM FileNet Client Version:**Select the client version that you want to use with the IBM FileNet Content Server.
   - **IBM FileNet Client Installation Directory Path:** Click **Browse** to select the directory path.

     NOTE: The validation of IBM FIleNet may fail if there are special characters, such as hyphen (-), underscore (_), comma (,), or dot (.) in the directory name containing the IBM FileNet client.

   *Click **Verify**, and when complete, click **Next** to continue.*
2) On the Specify IBM FileNet Content Server Settings screen, enter the required details, and click **Next**. Press F1 for more information.
3) On the Specify Client for IBM FileNet Process Engine screen, enter the required details, and click **Verify**. When complete, click **Next**.
4) On the Specify IBM FileNet Process Engine Server Settings screen, enter the required details and click **Next**. Press F1 for more information.
5) On the Configure Connector for IBM FileNet screen, click **Configure FileNet Connector**. When complete, click **Next**.
6) On the Required Manual Configurations for Connector for IBM FileNet screen, review and perform the manual steps listed and then click **Next**.

Configure Connector for Microsoft® SharePoint®

NOTE: In case of a remote AEM Forms on JEE deployment, you cannot configure the Connector for Microsoft SharePoint using Configuration Manager.

On the Configure Adobe Adobe Experience Manager Forms Connector for Microsoft SharePoint screen, do one of the following tasks:

- Deselect the **Configure Adobe Experience Manager Forms Connector for Microsoft SharePoint** option to manually configure Microsoft Sharepoint later, and then click **Next**.
- Leave the **Configure Adobe Experience Manager forms Connector for Microsoft SharePoint** option selected. Enter the required values, and then click Configure SharePoint Connector. When complete, click **Next**.

  NOTE: You can skip this step if you want to configure the Connector for Microsoft SharePoint later using administration console.

Configuring forms server for native file conversions

1) **(PDF Generator only)**On the **Admin user credentials for native PDF conversions**screen, enter the user name and password of a user with administrative privileges on the server computer, and then click**Add user.**

   NOTE: You must add at least one administrative user for Windows 2008 Server. On Windows 2008 Server, User Account Control (UAC) must be disabled for the users you add. To disable UAC, click

Control Panel> **User Accounts** > **Turn User Account Control on or off**and deselect Use User Account Control (UAC) to help protect your computer, then click **OK**. Restart the computer to apply these changes.

System readiness test for PDF Generator

1) On the **Document Services PDF Generator System Readiness Test** screen, click **Start** to validate if the system has been appropriately configured for PDF Generator. Review the System Readiness Tool Report and click **Next.**Note that the system readiness test fails if AEM Forms on JEE is deployed on a remote machine.

Configuring Acrobat Reader DC extensions

1) On the Acrobat Reader DC extensions Credential Configuration screen, specify the details that are associated with the Acrobat Reader DC extensions credential that activates the module services.

   NOTE: You can skip this step at this time by selecting **Configure later using administration console**. You can configure the Acrobat Reader DC extensions credential by using Administration Console after you complete the deployment. (After logging in to administration console, click **Home** > **Settings** >**Trust Store Management** > **Local Credentials***)*

   *Click **Configure**and then click **Next**.*

Summary, and Next Steps

1) Server restart required screen requires you to restart your application server for some configurations to take effect. When finished, click **Next**.
2) Review the Configuration Manager task summary list and choose the appropriate options:
   – Select Launch Next Steps to view information about AEM Forms on JEE users and administrative interfaces to launch an html page containing step-by-step instructions to start and use AEM Forms.

   ***NOTE:** You will see a message on the screen to restart the server. However, do not immediately restart. Ensure that [crx-repository]/logs/error.log is stable and all bundles (except signatures) are in active mode before you restart the server.Click **Finish** to exit the Configuration Manager.*

6. Import CRX repository content

LiveCycle uses TarPM persistence to store content. AEM 6.4 uses Apache JackRabbit Oak-based repository. The Oak-based repository offers three persistence formats — TarMK, MongoMK, and RDBMK. You have already selected the repository type for your AEM Forms installation on the CRX Configuration screen of Configuration Manager.

Now, to complete the upgrade, import Correspondence Management exported from LiveCycle to AEM Forms repository.

1) Navigate to the [crx-repository]\ folder and delete all the files and folders except the install folder.
2) Copy the following packages from [AEM-Installation-Directory]\configurationManager\export\crx-quickstart\install to [AEM-Installation-Directory]\crx-repository\install directory.
   - adobe-lc-forms-lccontent-pkg.zip
   - adobe-lc-landingpage-pkg.zip
   - adobe-lc-processreporting-pkg.zip
   - adobe-lc-workspace-pkg.zip
   - adobe-rightsmanagement-indexer-pkg.zip
   - adobe-lc-formsmanager-upgrade-pkg.zip
3) Start the application server and deploy the adobe-livecycle-cq-author.ear file located at [AEM_forms root]\configurationManager\exportfolder to the application server.

   NOTE: Before continuing with the next steps, wait until the ServiceEvent REGISTERED and ServiceEvent UNREGISTERED messages stop appearing in the <crx-repository>/error.log file.
4) Restart the AEM Forms server.

   NOTE: Before continuing with the next steps, wait until the ServiceEvent REGISTERED and ServiceEvent UNREGISTERED messages stop appearing in the <crx-repository>/error.log file.
5) Import Correspondence Management. You can perform the manual steps listed below to import Correspondence Management assets:
   a) Log in to AEM Forms server as an administrator.
   b) Tap Adobe Experience Manager icon on the top left corner and tap Forms. Tap letters and tap Create > File Upload and select the .zip file. The .zip file is imported.
   c) Click Adobe Experience Manager icon on the top left corner. Navigate to Tools > Deployment > Packages.
   d) Click Upload Package. In the dialog box, browse and select the forms package exported earlier to import, click Open, and click OK. The package is uploaded.
   e) Click Install after the package is uploaded. The assets are successfully imported.

      NOTE: In AEM 6.4 Forms, the structure of repository has changed. If you have customized any crx-repository based component in LiveCycle, you may have to manually export the dependencies from LiveCycle crx-repository and import to AEM Forms crx-repository. For details of changes in the structure of the repository, see Repository Restructuring in AEM 6.4.

7. Post-deployment tasks

7.1. General tasks

As part of upgrade preparation, we put the server in maintenance mode before starting the upgrade process. Hence, we must disable the maintenance mode of the upgraded AEM Forms server before performing any other post-deployment tasks.

Turn off maintenance mode

NOTE: Applicable only if you had put the previous version in maintenance mode before upgrade.

In a web browser, enter:

```
http://[hostname]:[port]/dsc/servlet/DSCStartupServlet?maintenanceMode=resume&user=[administrator username]&password=[password]
```

A "now running" message is displayed in the browser window.

Configure the serialization agent

AEM Forms requires the `sun.util.calendar` package to be whitelisted. Perform the following steps to add the package to the whitelist:

1) Open the Web Console in a browser window. The default URL is http://[server]:[port]/system/console/configMgr.
2) Search and open Deserialization Firewall Configuration.
3) In the whitelist field, add the `sun.util.calendar` package and click Save.

Setting the correct date, time, and time zone

Setting the correct date, time, and time zone on all servers connected to your AEM Forms on JEE environment will ensure that time-dependent modules, such as Digital Signatures and Acrobat Reader DC extensions function correctly. For example, if a signature appears to have been created in the future, it will not validate.

Servers that require synchronization are database servers, LDAP servers, HTTP servers, and J2EE servers.

Configure URL and port number for client SDK

Perform the following section, only if you have installed CRX repository:

The default URL of AEM Forms client SDK (CSDK) is http://localhost:8080. Change the default URL to the current URL of your AEM Forms environment. The current URL is required to enable and configure authentication between AEM configuration manager and CRX-repository:

1) Open the configuration manager URL, http://<server>:<port>/lc/system/console/configMgr, in a browser window.
2) Search and open the Adobe LiveCycle Client SDK Configuration service for editing.
3) In the Server URL field, specify current URL of your AEM Forms environment, and click Save.

Boot delegate RSA and BouncyCastle libraries

Perform the following section, only if you have installed CRX repository:

AEM Forms requires RSA and BouncyCastle libraries to be installed with AEM Forms add-on package. Perform the following steps to boot delegate these libraries:

1) Stop the AEM instance.
2) Navigate to the [AEM installation directory]\crx-repository\launchpad\ folder and open the sling.properties file for editing.
3) Add the following properties to the sling.properties file:

   ```
   sling.bootdelegation.class.com.rsa.jsafe.provider.JsafeJCE=com.rsa.*sling.bootdelegation.class.org.bouncycastle.jce.provider.BouncyCastleProvider=org.bouncycastle.*
   ```

4) Save and close the file. Restart the AEM instance.

   NOTE: Before restarting the AEM Forms server, wait until the ServiceEvent REGISTERED and ServiceEvent UNREGISTERED messages stop appearing in the <crx-repository>/error.log file and the log is stable.

Restart the application server

When you first deploy AEM Forms on JEE, the server is in a deployment mode in which most modules are in memory. As a result, the memory consumption is high and the server is not in typical production state. You must restart the application server to get the server back into a clean state.

Verify the deployment

You can verify the deployment by logging in to Administration Console. If you log in successfully, it means AEM Forms on JEE is running on the application server and the default user is created in the database. To verify the CRX repository deployment, access the CRX welcome page.

You can review the application server log files to ensure that components were deployed correctly or to determine the cause of any deployment issues you may encounter.

Accessing administration console

If you have upgraded, the username and password remain the same as they were on the previous installation.

1) Type the following URL in a web browser:

   `http://[hostname]:[port]/adminui`

   For example: `http://localhost:9080/adminui`

2) If you have upgraded to AEM Forms on JEE, enter the same administrator username and password as that of your previous installation. In case of a fresh installation, enter the default username and password.

3) After you log in, click **Services** to access the service administration pages or click **Settings** to access the pages on which you can administer settings for different modules.

Change the default password of AEM Administrators

If you have upgraded to TarMK, then skip the following section:

AEM embedded within AEM Forms on JEE creates two administrator users as mentioned below.

- **Super Administrator (administrator)**: The Super Administrator user can access various CRX UIs, except OSGi Management Console, and perform admin operations. The default username and password are the same as AEM Forms on JEE Administrator. The changed password will be applicable for both AEM Forms on JEE and Super Administrators.
- **CRX Administrator (admin)**: This user can access OSGi console in addition to CRX UIs and has administrator privileges. The default username and password for the user are **admin/admin**. To change the default password, do the following:
  a) Type the following URL in a web browser.

     `http://[hostname]:[port]/lc/libs/granite/security/content/useradmin.html`

  b) Login using following credential:

     ***Username**: admin*

     ***Password**: admin*

  c) Search for user **Administrator**.

  d) Click on the user in left pane, the user details are displayed in the right pane.

  e) Click on **Edit** icon in the right pane.

  f) On the edit page in the right pane, provide new password in the **New Password** field and current password in **Your Password** field.

  g) Click the **Save** icon in the right pane.

  h) Re-login using the changed password to verify.

Accessing OSGi Management Console

OSGi console provides a way to manage OSGi bundles and services configurations. To, access the OSGi Management console:

1) Type the following URL in a web browser:

   `http://[hostname]:[port]/lc/system/console`

2) Enter the CRX Administrator username and password. The default username and password for logging in is admin and admin (same as CRX Administrator).

   NOTE: You cannot log into OSGi Management Console using the credentials of AEM Forms on JEE Administrator or AEM Super Administrator.

3) After you log in, you can access various components, services, bundles, and other configurations.

View the log files

Events, such as run-time or startup errors, are recorded to the application server log files. If you have problems deploying to the application server, you can use the log files to find the problem. You can open the log files using any text editor.

The following log files are located in the *[appserver root]*/profiles/*[profilename]*/logs/*[server name]* directory:

- SystemErr.log
- SystemOut.log
- startServer.log

Following CRX log files are located at [*CRX_home*]/logs

- error.log
- audit.log
- access.log
- request.log
- update.log

NOTE: Each time AEM Forms on JEE starts, the following error appears in the log:

```
FacesConfigur E org.apache.myfaces.config.FacesConfigurator
configureRenderKits failed to configure class
com.adobe.framework.jsf.renderkit.SecureInputRenderer
java.lang.ClassCastException
```

This error occurs due to a different version of the IBM JSF engine expected by WebSphere. This is a known issue and this error can be safely ignored.

Configure Author and Publish instance

Perform the following tasks to configure Author and Publish instance only if you have installed and configured the CRX repository:

Configure the Author instance

Author instance is embedded within the AEM Forms on JEE server. It implies that you do not need to make any configuration updates to the Author instance. The instance inherits all configuration settings from the AEM Forms on JEE instance.

Configure the Publish instance

You must run separate author and publish instances.You can configure the instances on different machines.

NOTE: The cluster topology is not recommended for the publish instance. Use a single publish instance or configure a farm of publish instances.

NOTE: By default, the publish instance is configured to run the mode similar to corresponding author instance. The mode can be TarMK, MongoMK, or RDBMK. Run the publish instance on TarMK mode.

Configure the Publish Node

1) Create a new appserver profile for the publish instance on the same or on a different machine.
2) On the author instance, navigate to the [*aem-forms root*]/configurationManager/export/ directory.
3) Copy the adobe-livecycle-cq-publish.ear file and deploy it to the appserver profile created in step 1.
4) Copy the content of the [*aem-forms root*]/configurationManager/export/crx-quickstart directory to the file server for the publish instance.
5) **(If author instance is configured to run RDBMK)** Delete the following files from the install directory copied to the publish instance:
   – org.apache.jackrabbit.oak.plugins.document.DocumentNodeStoreService.cfg
   – org.apache.sling.datasource.JNDIDataSourceFactory-oak.cfg
6) Start the publish server with `-Dcom.adobe.livecycle.crx.home=<location for crx-repository>` parameter, where `<location for crx-repository>` is the location where you copied the crx-repository directory for the publish instance. For example, if the content of the cq-quickstart directory are copied to the C:\CM-publish\crx-repository directory, then the <location for crx-repository> parameter will be Dcom.adobe.livecycle.crx.home=C:\CM-publish\crx-repository.

NOTE: If author and publish instances are on the same machine, ensure that you start the publish instance using a different port.

IMPORTANT: Ensure that the CRX repository path does not contain spaces.

Communicating between the Author and Publish instances

Enable two-way communication between Author and Publish instances:

Define Publish instance URL

1) Go to http://<*authorHost*>:<*authorPort*>/lc/etc/replication/agents.author/publish.html.
2) Click **Edit**. The Agent Settings dialog opens.

3) Click the **Transport** tab and specify the URL to the publish server in the URI field.

   http://<publishHost>:<publishPort>/lc/bin/receive?sling:authRequestLogin=1

   NOTE: If there are multiple publish instances managed by a Load Balancer, specify the URL to the load balancer in the URI field.

4) Click **OK**.

NOTE: For author clusters, these steps need to be performed on one author instance (preferably a master instance).

Define publish instance URL for ActivationManagerImpl

1) Go to http://<*authorHost*>:<*authorPort*>/lc/system/console/configMgr. The default username and password for logging in are admin and admin (same as CRX Administrator).
2) Find and click the Edit icon next to the `com.adobe.livecycle.content.activate.impl.ActivationManagerImpl.name` setting.
3) In the ActivationManager Publish URL field, specify the URL for the corresponding publish instance.
4) Click **Save**.

Configure reverse replication queue

1) Go to http://<*authorHost*>:<*authorPort*>/lc/etc/replication/agents.author/publish_reverse.html.
2) Click **Edit**. The Agent Settings dialog opens.
3) Click the **Transport** tab and specify the URL to the corresponding publish server in the URI field.

   NOTE: If there are multiple publish instances managed by a Load Balancer, specify the URL to the load balancer in the URI field.

4) Click **OK**.

Define author instance URL

1) Go to http://<*publishHost*>:<*publishPort*>/lc/system/console/configMgr. The default username and password for logging in are admin and admin (same as CRX Administrator).
2) Find and click the Edit icon next to the `com.adobe.livecycle.content.activate.impl.VersionRestoreManagerImpl.name` setting.
3) In the VersionRestoreManager Author URL field, specify the URL for the corresponding author instance.

   NOTE: If there are multiple author instances managed by a Load Balancer, specify the URL to the load balancer in the VersionRestoreManager Author URL field.

4) Click **Save**.

Configure IPv6 implementation

NOTE: Perform these steps only if the machine/server is using an IPv6 address.

To map the IPv6 address to a hostname on the server and client machines:

1) Navigate to the C:\Windows\System32\drivers\etc directory.
2) Open the `hosts` file in a text editor.
3) Add a mapping for the IPv6 address to a host name. For example:
   `2001:1890:110b:712b:d1d:9c99:37ef:7281 <ipv6_hostname>`
4) Save and close the file.

Ensure that you use the mapped host name instead of the IPv6 address to access the machine.

Install Japanese fonts for Adobe Reader

If your document fragments use Japanese fonts, you must install the Japanese Language Support Package for Adobe Reader. Otherwise, your letters and forms will not render and function properly. For installing language packs, visit the downloads page for Adobe Reader.

Upgrading to Workbench

Once you have completed your AEM Forms on JEE server upgrade and verified that it is working properly, install the new version of Workbench in order to continue creating and modifying your AEM Forms on JEE applications.

Configure CSIv2 inbound transport

On the default Global Security enabled installation of IBM WebSphere, CSIv2 inbound transport option is set to SSL-required. This configuration causes Output and Forms components to fail. Ensure that you change CSIv2 inbound transport option to SSL-Supported: To change the option:

1) Log in to IBM WebSphere administration console.
2) Expand **Security**, and then click **Global security**.
3) In the Authentication section, expand **RMI/IIOP security**, and then click **CSIv2 inbound communications**
4) In CSIv2 Transport Layer section, set value of **Transport** to **SSL-Supported**.
5) Click **Apply**.

Migrate adaptive forms and Correspondence Management assets

The migration utility makes assets of earlier versions compatible with AEM 6.4 forms. You can download the utility from AEM package share. For detailed steps, see https://helpx.adobe.com/experience-manager/6-4/forms/using/migration-utility.html.

Remove Adobe Correspondence Management Utilities Bundle

AEM Forms shipped Correspondence Management Utilities Bundle with previous releases of AEM Forms. The bundle is not required on AEM 6.4 Forms setup. Perform the following steps to uninstall the bundle:

1) Open the http://[server]:[port]/lc/system/console/bundles URL in a browser window.
2) Search and open the Adobe Correspondence Management Utilities Bundle.
3) Click the uninstall icon to remove the bundle.

Reconfigure Adobe Sign

f you had Adobe Sign configured in the previous version of AEM Forms, then reconfigure Adobe Sign from AEM Cloud services. For more details, see https://helpx.adobe.com/content/help/en/aem-forms/6-4/adobe-sign-integration-adaptive-forms.html.

Reconfigure analytics and reports

In AEM 6.4 Forms, traffic variable for source and success event for impression are not available. So, when you upgrade to AEM 6.4 Forms, AEM Forms stops sending data to Adobe Analytics server and analytics reports for adaptive forms and adaptive document are not available. Moreover, AEM 6.4 Forms introduces traffic variable for the version of form analytics and success event for the amount of time spent on a field. So, reconfigure analytics and reports for your AEM Forms environment. For detailed steps, see https://helpx.adobe.com/content/help/en/aem-forms/6-4/configure-analytics-forms-documents.html.

Methods to calculate average fill time for forms and average read time for adaptive documents have changed. So, when you upgrade to AEM 6.4 forms, the old data from previous AEM Forms release for these metrics is available only in Adobe Analytics. It is not visible in AEM Forms analytics reports. For these metrics, AEM Forms analytics reports display data which is captured after performing the upgrade.

Configure the ContentRepositoryConnector service

By default, the ContentRepositoryConnector service is configured to use URL http://localhost:8080/lc/crx/server/. Perform the following steps to configure the service for your environment:

1) Log in to AEM Forms Admin UI using credentials administrator/password. The default URL of Admin UI is http://[IP]:[Port]/adminui.
2) Navigate to Services > Application and Services > Service Management.
3) Search and open the ContentRepositoryConnector service for editing.
4) Open the Configuration tab and replace the default URL in the Experience Management Server field with the URL of your environment.

IP

IP address of the machine on which application server is running.

Port

Port number which AEM Forms is using. The default port number for JBoss, WebLogic, and WebSphere 8080, 8001, and 9080, respectively.

Configure fonts manager service

1) Go to http://[hostname]:[port]/system/console/configMgr.
2) Click the CQ-DAM-Handler-Gibson Font Manager Service to open in edit mode.
3) Specify paths to the directories for system fonts, Adobe server fonts, and customer fonts in the respective fields. Click Save.

   NOTE: Your right to use fonts provided by parties other than Adobe is governed by the license agreements provided to you by such parties with those fonts, and is not covered under your license to use Adobe software. Adobe recommends that you review and ensure that you are in compliance with all applicable non-Adobe license agreements before using non-Adobe fonts with Adobe software, particularly with respect to use of fonts in a server environment.
4) Restart the AEM Forms server.

7.2. Configure Author and Publish instance

Perform the following tasks to configure Author and Publish instance only if you have installed and configured the CRX repository:

Configure the Author instance

Author instance is embedded within the AEM Forms on JEE server. It implies that you do not need to make any configuration updates to the Author instance. The instance inherits all configuration settings from the AEM Forms on JEE instance.

Configure the Publish instance

You must run separate author and publish instances.You can configure the instances on different machines.

NOTE: The cluster topology is not recommended for the publish instance. Use a single publish instance or configure a farm of publish instances.

NOTE: By default, the publish instance is configured to run the mode similar to corresponding author instance. The mode can be TarMK, MongoMK, or RDBMK. Run the publish instance on TarMK mode.

Configure the Publish Node

1) Create a new appserver profile for the publish instance on the same or on a different machine.
2) On the author instance, navigate to the [*aem-forms root*]/configurationManager/export/ directory.
3) Copy the adobe-livecycle-cq-publish.ear file and deploy it to the appserver profile created in step 1.
4) Copy the content of the [*aem-forms root*]/configurationManager/export/crx-quickstart directory to the file server for the publish instance.

5) **(If author instance is configured to run RDBMK)** Delete the following files from the install directory copied to the publish instance:
   – org.apache.jackrabbit.oak.plugins.document.DocumentNodeStoreService.cfg
   – org.apache.sling.datasource.JNDIDataSourceFactory-oak.cfg

6) Start the publish server with `-Dcom.adobe.livecycle.crx.home=<location for crx-repository>` parameter, where `<location for crx-repository>` is the location where you copied the crx-repository directory for the publish instance. For example, if the content of the cq-quickstart directory are copied to the C:\CM-publish\crx-repository directory, then the <location for crx-repository> parameter will be Dcom.adobe.live-cycle.crx.home=C:\CM-publish\crx-repository.

NOTE: If author and publish instances are on the same machine, ensure that you start the publish instance using a different port.

IMPORTANT: Ensure that the CRX repository path does not contain spaces.

Communicating between the Author and Publish instances

Enable two-way communication between Author and Publish instances:

Define Publish instance URL

1) Go to http://<*authorHost*>:<*authorPort*>/lc/etc/replication/agents.author/publish.html.
2) Click **Edit**. The Agent Settings dialog opens.
3) Click the **Transport** tab and specify the URL to the publish server in the URI field.
   http://<publishHost>:<publishPort>/lc/bin/receive?sling:authRequestLogin=1
   NOTE: If there are multiple publish instances managed by a Load Balancer, specify the URL to the load balancer in the URI field.
4) Click **OK**.

NOTE: For author clusters, these steps need to be performed on one author instance (preferably a master instance).

Define publish instance URL for ActivationManagerImpl

1) Go to http://<*authorHost*>:<*authorPort*>/lc/system/console/configMgr. The default username and password for logging in are admin and admin (same as CRX Administrator).
2) Find and click the Edit icon next to the `com.adobe.livecycle.content.activate.impl.ActivationManagerImpl.name` setting.
3) In the ActivationManager Publish URL field, specify the URL for the corresponding publish instance.
4) Click **Save**.

Configure reverse replication queue

1) Go to http://<*authorHost*>:<*authorPort*>/lc/etc/replication/agents.author/publish_reverse.html.
2) Click **Edit**. The Agent Settings dialog opens.
3) Click the **Transport** tab and specify the URL to the corresponding publish server in the URI field.

   NOTE: If there are multiple publish instances managed by a Load Balancer, specify the URL to the load balancer in the URI field.
4) Click **OK**.

Define author instance URL

1) Go to http://<*publishHost*>:<*publishPort*>/lc/system/console/configMgr. The default username and password for logging in are admin and admin (same as CRX Administrator).
2) Find and click the Edit icon next to the `com.adobe.livecycle.content.activate.impl.VersionRestoreManagerImpl.name` setting.
3) In the VersionRestoreManager Author URL field, specify the URL for the corresponding author instance.

   NOTE: If there are multiple author instances managed by a Load Balancer, specify the URL to the load balancer in the VersionRestoreManager Author URL field.
4) Click **Save**.

Configure IPv6 implementation

NOTE: Perform these steps only if the machine/server is using an IPv6 address.

To map the IPv6 address to a hostname on the server and client machines:

1) Navigate to the C:\Windows\System32\drivers\etc directory.
2) Open the `hosts` file in a text editor.
3) Add a mapping for the IPv6 address to a host name. For example:
   `2001:1890:110b:712b:d1d:9c99:37ef:7281 <ipv6_hostname>`
4) Save and close the file.

Ensure that you use the mapped host name instead of the IPv6 address to access the machine.

Install Japanese fonts for Adobe Reader

If your document fragments use Japanese fonts, you must install the Japanese Language Support Package for Adobe Reader. Otherwise, your letters and forms will not render and function properly. For installing language packs, visit the downloads page for Adobe Reader.

7.3. Configuring PDF Generator

If you installed PDF Generator, complete the following tasks:

Environment variables

If you configured PDF Generator to convert files to PDF, for some file formats, you must manually set environment variables that contain the absolute path of the executable that is used to start the corresponding application. The table below lists the environment variables for the native applications.

NOTE: Ensure that the required applications are installed on all nodes in the cluster.

NOTE: All environment variables and respective paths are case-sensitive.

Application	Environment variable	Example
Adobe Acrobat	`Acrobat_PATH`	`C:\Program Files (x86)\Adobe\Acrobat 2015\Acrobat\Acrobat.exe`
Notepad	`Notepad_PATH`	`C:\WINDOWS\notepad.exe` You can leave the `Notepad_PATH` variable blank.
OpenOffice	`OpenOffice_PATH`	`C:\Program Files (x86)\OpenOffice 4`

NOTE: These environment variables must be set for all nodes in the cluster.

NOTE: The environment variable `OpenOffice_PATH` is set to the installation folder instead of the path to the executable.

Configuring the application server to use HTTP proxy server

If the computer that AEM Forms on JEE is running on uses proxy settings to access external web sites, the application server should be started with the following values set as Java virtual machine (JVM) arguments:

```
-Dhttp.proxyHost=[server host]
-Dhttp.proxyPort=[server port]
```

Complete the following procedure to start your application server with HTTP proxy host setting.

1) In the WebSphere Administrative Console navigation tree, log in to WebSphere Administrative Console, click Servers > Server Types > WebSphere application servers, and then click the name of the server instance to configure (for example, server1).
2) Under Server Infrastructure, click **Java and Process Management** > **Process Definition.**
3) Under Additional Properties, click **Java Virtual Machine** > **Custom Properties**.
4) Click **New** and, in the **Name** box, type `http.proxyHost`.
5) In the **Value** box, type the host name or IP address of your HTTP proxy server and then click **OK**.
6) Click **New** and, in the **Name** box, type `http.proxyPort`.

7) In the **Value** box, type the port number of your HTTP proxy server and then click **OK**.
8) In the **Messages** box, click **Save directly to master configuration**.
9) Restart all WebSphere server instances.

Setting the Adobe PDF Printer as the default printer

You must set the Adobe PDF Printer to be the default printer on the server. If the Adobe PDF Printer is not set as the default, PDF Generator cannot convert files successfully.

For clusters, you must set Adobe PDF Printer as the default printer on all nodes.

Set the default printer

1) Select **Start** > **Printers and Faxes**.
2) In the Printers and Faxes window, right-click **Adobe PDF** and select **Set as Default Printer**.

Configuring Acrobat Professional (Windows-based Computers Only)

NOTE: This procedure is required only if you upgraded to or installed Acrobat after you completed the AEM Forms on JEE installation. Upgrading Acrobat can be completed after you run Configuration Manager and deploy AEM Forms on JEE to the application server. Acrobat Professional root directory is designated as *[Acrobat root]*. Typically, the root directory is *C:\Program Files (x86)\Adobe\Acrobat 2015\Acrobat*.

Configure Acrobat for use with PDF Generator

1) If an earlier version of Acrobat is installed, uninstall it by using Add or Remove Programs in the Windows Control Panel.
2) Install Acrobat DC Pro by running the installer.
3) Navigate to the additional\scripts folder on the AEM Forms on JEE installation media.
4) Run the following batch file.

   `Acrobat_for_PDFG_Configuration.bat` *`[aem_forms root]/pdfg_config`*

5) On other cluster nodes on which you do not run AEM Forms on JEE Configuration Manager, do the following:
   – Add a new registry DWORD entry named SplWOW64TimeOut at HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print. Set its value to 60000.
   – Copy `PDFGen.api` from the [*aem-forms root*]/plugins/x86_win32 directory on the node where AEM Forms on JEE is installed to the [*Acrobat root*]/plug_ins directory on the node being currently configured.
6) Open Acrobat and select **Help** > **Check for updates** > **Preferences**.
7) De-select **Automatically check for Adobe updates**.

Validate the Acrobat installation

1) Navigate to a PDF file on your system and double-click it to open it in Acrobat. If the PDF file opens successfully, Acrobat is installed correctly.
2) If the PDF file does not open correctly, uninstall Acrobat and reinstall it.

NOTE: Ensure that you dismiss all Acrobat dialog boxes that are displayed after Acrobat installation is complete and disable the automatic updates for Acrobat. Set the `Acrobat_PATH` environment variable to point to Acrobat.exe. For example, C:\Program Files (x86)\Adobe\Acrobat 2015\Acrobat\Acrobat.exe.

Add temporary directories to trusted directories list in Acrobat

The `OptimizePDF` service uses Adobe Acrobat and mandates that AEM Forms on JEE temporary directory and PDF Generator temporary directory are listed in the trusted directories list of Acrobat.

If AEM Forms on JEE temporary directory and PDF Generator temporary directory are not listed in the trusted directories list, the `OptimizePDF` service fails to run. Perform the following steps to add directories to the temporary directory list:

1) Open Acrobat, Choose Edit > Preferences.
2) From the Categories on the left, select Security (Enhanced), and then select the Enable Enhanced Security option.
3) To add AEM Forms on JEE temporary directory and PDF Generator temporary directory to the trusted directories list, click **Add Folder Path**, select directories, and click **OK.**

Installing East Asian characters in Windows Server 2003

When HTML files are converted to PDF using PDF Generator, some East Asian languages, such as Japanese, Korean, and Chinese, and also right-to-left languages, such as Arabic, Armenian, Georgian, Hebrew, Indic, Thai, and Vietnamese, may not be displayed in the PDF file.

To ensure that these languages are displayed in Windows Server 2003, appropriate fonts must be present on the client and server.

Install East Asian characters in Windows Server 2003

1) Select **Start** > **Control Panel** and open **Regional and Language Options**.
2) Click the **Languages** tab and select **Install Files for East Asian Languages**.
3) Click the **Advanced** tab and select all options under Code Page Conversion Tables.

If converted PDF files are still missing fonts, verify that the Arial Unicode MS (TrueType) font (ARIALUNI.TTF) is present in the C:\WINDOWS\Fonts directory.

Adding fonts to PDF Generator

AEM Forms on JEE provides a central repository of fonts, which is accessible to all AEM Forms on JEE modules. Make any extra fonts available to non-AEM Forms on JEE applications on the server so that PDF Generator can use these fonts to create PDF documents created with these applications.

NOTE: *Restart the application server after adding new fonts to the specified fonts folder.*

Non-AEM Forms on JEE applications

The following list contains non-AEM Forms on JEE applications that PDF Generator can use for PDF generation on the server side:

Windows-only Applications

- Microsoft Office Word
- Microsoft Office Excel
- Microsoft Office PowerPoint
- Microsoft Office Project
- Microsoft Office Publisher
- Adobe FrameMaker
- Adobe PageMaker
- Adobe Acrobat Professional

Multi-platform applications

- OpenOffice Writer
- OpenOffice Calc
- OpenOffice Draw
- OpenOffice Impress

NOTE: In addition to these applications, your list may include additional applications that you added.

Of the above applications, the OpenOffice Suite (which includes Writer, Calc, Draw, and Impress) is available on Windows and Linux platforms, whereas other applications are available on Windows only.

Adding new fonts to Windows applications only

All Windows-only applications that are mentioned above can access all the fonts available in the C:\Windows\Fonts (or equivalent) folder. In addition to C:\Windows\Fonts, each of these applications may have its own private fonts folders.

Therefore, if you plan to add any custom fonts to the AEM Forms on JEE fonts repository, ensure that the same fonts are available to the Windows-only applications also by copying these fonts to either C:\Windows\Fonts or to an equivalent folder.

Your custom fonts must be licensed under an agreement that allows you to use them with the applications that have access to these fonts.

Adding new fonts to other applications

If you added support for PDF creation in other applications, see the Help for these applications to add new fonts. In Windows, copying your custom fonts to the C:\Windows\Fonts (or equivalent) folder should be sufficient.

Adding new fonts to OpenOffice Suite

Adding custom fonts to OpenOffice Suite is explained on the OpenOffice *Fonts-FAQ* page at http://wiki.services.openoffice.org.

Configuring HTML to PDF conversions

The HTML-to-PDF conversion process is designed to use the settings from Acrobat DC Pro that override the settings from PDF Generator.

NOTE: This configuration is required to enable the HTML-to-PDF conversion process, otherwise this conversion type will fail.

Configure the HTML-to-PDF conversion

1) Install and validate Acrobat as described in ConfiguringAcrobatProfessional.
2) Locate the pdfgen.api file in the *[aem-forms root]*\plugins\x86_win32 directory and copy it to *[Acrobat root]*\Acrobat\plug_ins directory.

Enable support for Unicode fonts in HTML to PDF conversions

IMPORTANT: The HTML-to-PDF conversion fails if the zipped input file contains HTML files with double-byte characters in filenames. To avoid this problem, do not use double-byte characters when naming HTML files.

1) Copy the Unicode font to any of the following directories as appropriate for your system:
   - Windows
     [Windows root]\Windows\fonts
     [Windows root]\WINNT\fonts
   - UNIX
     /usr/lib/X11/fonts/TrueType
     /usr/openwin/lib/X11/fonts/TrueType
     /usr/share/fonts/default/TrueType
     /usr/X11R6/lib/X11/fonts/ttf
     /usr/X11R6/lib/X11/fonts/truetype
     /usr/X11R6/lib/X11/fonts/TrueType
     /usr/X11R6/lib/X11/fonts/TTF
     /Users/cfqauser/Library/Fonts
     /System/Library/Fonts
     /Library/Fonts
     /Users/ + System.getProperty(<username>, root) + /Library/Fonts
     System.getProperty(JAVA_HOME) + /lib/fonts

   NOTE: Ensure that the directory /usr/lib/X11/fonts exists. If it does not exist, create a symbolic link from /usr/share/X11/fonts to /usr/lib/X11/fonts using the `ln` command.

NOTE: Ensure that the fonts are present in either /usr/share/fonts or /usr/share/X11/fonts directory.

2) Unzip the IBM type1 courier font to the /usr/share/X11/fonts/font-ibm-type1-1.0.3 folder.
3) Create a symbolic link from /usr/share/fonts to /usr/share/X11/fonts.
4) Modify the font-name mapping in the cffont.properties file located in the *[aem-forms root]*/deploy/adobe-generatepdf-dsc.jar file:
   – Extract the archive file, and locate the cffont.properties file and open it in an editor.
   – In the comma-separated list of Java font names, add a map to your Unicode system font for each font type. In the example below, kochi mincho is the name of your Unicode system font.

     ```
     dialog=Arial, Helvetica, kochi mincho
     dialog.bold=Arial Bold, Helvetica-Bold, kochi mincho ...
     ```

   – Save and close the properties file, and then repackage and redeploy the `adobe-generatepdf-dsc.jar` file.

NOTE: On a Japanese operating system, specify the font mapping in the cffont.properties.ja file as well, which takes precedence over the standard cffont.properties file.

TIP: Fonts in the list are searched from left to right, using the first font found. HTML-to-PDF conversion logs return a list of all the font names that are found in the system. To determine the font name you need to map, add the font to one of the directories above, restart the server, and run a conversion. You can determine from the log files the font name to use for mapping.

To embed the font in the generated PDF files, set the `embedFonts` property in the cffont.properties file to `true` (the default is `false`).

Installing the Network Printer Client

PDF Generator includes an executable file to install the PDF Generator network printer on a client computer. After the installation is complete, a PDF Generator printer is added to the list of existing printers on the client computer. This printer can then be used to send documents for conversion to PDF.

NOTE: The Network Printer Client installation wizard available in the administration console is supported only on Windows operating system. Ensure that you use a 32-bit JVM to launch the Network Printer Client installation wizard. You will encounter an error if you use a 64-bit JVM.

If the PDFG Network Printer fails to install on Windows or if you want to install the printer on UNIX or Linux platforms, use the operating system's native Add Printer utility and configure it as described in ConfigurePDFGNetworkPrinteronWindowsusingthenativeAddPrinterwizard

Install the PDF Generator Network Printer Client

NOTE: Before installing the PDF Generator network printer client on Windows Server, ensure that you have the Internet Printing Client feature installed on your Windows Server. For installing the feature, see Windows Server help.

1) Ensure that you have successfully installed PDF Generator on your server.
2) Do one of the following:

- From a Windows client computer, open the following URL in your web browser, where *[host]* is the name of the server where you installed PDF Generator and *[port]* is the application server port used.

  `http://[host]:[port]/pdfg-ipp/install`
- In administration console, click **Home > Services > PDF Generator > PDFG Network Printer**. In the **PDFG Network Printer Installation** section, click **Click here** to launch the PDFG Network Printer Installation.

3) On the Configure Internet Port screen, select **Use the specified user account** option, and provide the credentials of a AEM Forms on JEE user who has the PDFG Administrator/User role. This user must also have an email address that can be used to receive the converted files. To have this security setting apply to all users on the client computer, select**Use the same security options for all users**, and then click **OK**.

   NOTE: *If the user's password changes, then users will need to reinstall the PDFG Network Printer on their computers. You cannot update the password from administration console.*

   Upon successful installation, a dialog box appears, indicating that the printer is successfully installed.
4) Click **OK**. You will now have a PDF Generator printer available in your list of printers.

Configure PDFG Network Printer on Windows using the native Add Printer wizard

1) Click **Start** >**Printers and Faxes** and double-click **Add Printer**.
2) Click **Next**, select **A network printer, or a printer attached to another computer**, and then click **Next**.
3) Select **Connect to a printer on the Internet or on a home or office network** and type the following URL for the PDFG printer, where *[host]* is the server name and *[port]* is the port number where the server is running:

   `http://[host]:[port]/pdfg-ipp/printer`
4) On the Configure Internet Port screen, select **Use the specified user account** and provide valid User credentials.
5) In the **Printer Driver Select** box, choose any standard PostScript-based printer driver (for example, HP Color LaserJet PS).
6) Complete the installation by choosing appropriate options (for example, setting this printer as default).

   NOTE: The user credentials used while adding the printer must have a valid email ID configured in User Management to receive the response.
7) Configure the email service's sendmail service. Provide a valid SMTP server and authentication information in the service's configuration options.

Install and configure the PDF Generator Network Printer Client using Proxy server port forwarding

1) Configure port forwarding on the CC Proxy server on a particular port to the AEM forms on JEE Server, and disable the authentication at proxy server level (because AEM Forms on JEE uses its

own authentication). If a client connects to this Proxy server on the forwarded port, then all the requests will be forwarded to the AEM Forms on JEE Server.

2) Install PDFG Network Printer using the following URL:
`http://[proxy server]:[forwarded port]/pdfg-ipp/install.`
3) Provide the necessary credentials for authentication of the PDFG Network Printer.
4) The PDFG Network Printer will be installed on the client machine which you can use for PDF conversion using the firewall protected AEM Forms on JEE Server.

Changing File Block Settings

Change Microsoft Office trust center settings to enable PDFG to convert older versions of Microsoft office documents.

1) Click the **File tab** in any Office 2013 application. Under **File**, click **Options**; the Options dialog box appears
2) Click **Trust Center**, and then click **Trust Center Settings**.
3) In the **Trust Center settings**, click **File Block Settings**.
4) In the File Type list, uncheck open for the file type that you want PDF Generator to convert.

Watched folder performance parameters

To avoid `java.io.IOException` error messages indicating that not enough disk space is available to perform PDF conversions by using a watched folder, you can modify the settings for PDF Generator in administration console.

You must ensure that for WebSphere application server, the maximum transaction time-out and ORB service have proper values.

Configure transaction time-out

1) Do the following:
   – Log in to WebSphere Administrative Console, click **Servers** > **Server Types** > **WebSphere application servers**, and then click the name of the server instance to configure (for example, *server1*).
2) Under Container Settings, click **Container Services > Transaction Service**.
3) Under General Properties, in the **Total transaction lifetime timeout** box, type `300` (or higher).
4) Ensure that the value in the **Maximum transaction timeout** box is greater than or equal to the **Total transaction lifetime timeout**.
5) Click **OK** or **Apply** and then click **Save directly to master configuration**.

Increase the CORBA time-out value

1) Do the following:
   – Log in to WebSphere Administrative Console, click **Servers** > **Server Types** > **WebSphere application servers**, and then click the name of the server instance to configure (for example, *server1*).
2) Under Container Settings, click **Container Services > ORB Service**.
3) Under General Properties, in the **Request timeout** box, type `360` and, in the **Locate Request Timeout** box, type `300`.
4) Click **OK** or **Apply** and then click **Save directly to master configuration**.

Set performance parameters for PDF Generator

1) Log in to administration console and click **Services** >**Applications and Services**> **Service Management**.
2) In the list of services, navigate to and click **PDFGConfigService**, and then set the following values:
   – **PDFG Cleanup Scan Seconds**: 1800
   – **Job Expiration Seconds**: 6000
   – **Server Conversion Timeout**: Change the default of 270 to a higher value, such as 450.
3) Click **Save** and restart the server.

Enable PDF Conversion for Microsoft Word document containing protected fields

PDF Generator supports Microsoft Word documents containing protected fields. To enable PDF Conversion for Microsoft Word document containing protected fields, change the file type settings:

1) In the **administration console**, navigate to **Services** > **PDF Generator** > **File Type Settings**, and open your file type settings profile.
2) Expand the **Microsoft Word** option and select the **Preserve document markup in Adobe PDF (for Microsoft Office 2003 or later)** option.
3) Click **Save As**, specify name of the file type setting, and click **OK**.

7.4. Configure SSL for Document Security

Document Security requires the application server to be configured to use SSL. See administrationhelp.

7.5. Enable FIPS mode

NOTE: If you have configured it in the previous version, skip the following section:

AEM Forms on JEE provides a FIPS mode to restrict data protection to Federal Information Processing Standard (FIPS) 140-2 approved algorithms using the RSA BSAFE Crypto-C 2.1 encryption module.

If you did not enable this option by using Configuration Manager during AEM Forms on JEE configuration or if you enabled it but want to turn it off, you can change this setting through Administration Console.

Modifying FIPS mode requires you to restart the server.

FIPS mode does not support Acrobat versions earlier than 7.0. If FIPS mode is enabled and the Encrypt With Password and Remove Password processes include the Acrobat 5 setting, the process fails.

In general, when FIPS is enabled, the Assembler service does not apply password encryption to any document. If this is attempted, a `FIPSModeException` is thrown, indicating that "Password encryption is not permitted in FIPS mode." Additionally, the `PDFsFromBookmarks` element is not supported in FIPS mode when the base document is password-encrypted.

Turn FIPS mode on or off

1) Log in to administration console.
2) Click **Settings** > **Core System Settings**> **Configurations**.
3) Select **Enable FIPS** to enable FIPS mode or deselect to disable FIPS mode.
4) Click **OK** and restart the application server.

NOTE: AEM forms on JEE software does not validate code to ensure FIPS compatibility. It provides a FIPS operation mode so that FIPS-approved algorithms are used for cryptographic services from the FIPS-approved libraries (RSA).

7.6. Configure WebSphere Application Server if global security is enabled

If your installation uses global security, you must run WebSphere Application Server as a user with the appropriate roles. You can employ one of the following options to configure WebSphere Application Server to run if WebSphere global security is enabled:

- Create a new user with the necessary roles, and run WebSphere Application Server with that user. If a user already exists to run WebSphere Application Server, assign necessary roles to that user.

  IMPORTANT: *Ensure that you start WebSphere Application Server as this user. Some WebSphere processes may fail if you start WebSphere Application Server as a different user while global security is enabled.*

  In a secure environment, it is recommended that you employ this option.
- Configure the EVERYONE group with the necessary roles.

To create a new WebSphere Application Server user:

1) In the WebSphere Administrative Console navigation tree, click **Environment** > **Naming** > **CORBA Naming Service Users**, and then in the right pane, click **Add**.
2) In **Roles**, select all the roles.
3) Under Search and Select Users, select the User Realm.

4) In the search box, type the search string and click **Search**. ***NOTE:*** *To retrieve all users, type an asterisk (*).*
5) From the Available text box, select the required users and click the right arrow to add them to the Mapped to role box.
6) Click **Save directly to master configuration**.

To configure an existing WebSphere Application Server user:

1) In the WebSphere Administrative Console navigation tree, click **Environment** > **Naming**> **CORBA Naming Service Users**, and then in the right pane, select the user.
2) In **Roles**, select the required roles.
3) Click **OK** or **Apply**.
4) Click **Save directly to master configuration**.

To configure the EVERYONE group

1) In the WebSphere Administrative Console navigation tree, click **Environment** > **Naming** > **CORBA Naming Service Groups**.
2) In **Roles**, select the required roles.
3) Enable **Select from special subjects**, and then from the Special subjects list, select the **EVERYONE** group.

NOTE: If the EVERYONE group is already configured, the group will not be shown in the Special subjects list. You only need to assign the required roles to this group if not already assigned.

1) Click **OK** or **Apply**.
2) Click **Save directly to master configuration**.

Configure CSIv2 inbound transport

On the default Global Security enabled installation of IBM WebSphere, CSIv2 inbound transport option is set to SSL-required. This configuration causes Output and Forms components to fail. Ensure that you change CSIv2 inbound transport option to SSL-Supported: To change the option:

1) Log in to IBM WebSphere administration console.
2) Expand **Security**, and then click **Global security**.
3) In the Authentication section, expand **RMI/IIOP security**, and then click **CSIv2 inbound communications**.
4) In CSIv2 Transport Layer section, set value of **Transport** to **SSL-Supported**.
5) Click **Apply**.

Enable WebSphere Global Administrative Security on author and publish instances

NOTE: If you had not selected the Content Repository options on the Modules screen of the configuration manager, do not perform the following steps.

WebSphere Global Administrative Security administrative security helps in hardening the environment for AEM Forms. It is recommended to enable Global Administrative Security on both author and publish instances.

By default, AEM internally uses the token **j_security_check**. Using the j_security_check token can cause a conflict with WebSphere's Global Administrative Security, as the token j_security_check is also used as the default for form-based authentication. To resolve this conflict, complete the following steps to switch over AEM to use the token **j_sling_security_check**.

NOTE: *These configuration changes are performed each time an AEM (OSGi) patch is applied that updates bundle.jar.*

Enable Administrative Security on the author instance

Perform the following steps to WebSphere Global Administrative Security on an author instance of AEM Forms:

1) Turn off global security
   a) Open administrative console of WebSphere application server
   b) Click Security > Global security. In Administrative Security, deselect the Enable Administrative Security option, click Apply, and click Save. It saves directly to the master configuration
   c) Restart the WebSphere application server.
2) Download and install LiveCycle embed package. To download the package, see AEM Forms Releases.
3) Log in to CRX DE Lite as an administrator. The default URL is http://[server]:[port]/lc/crx/de/index.jsp.
4) Open the /libs/Livecycle/core/content/login/login.js file for editing
5) Search the term `j_security_check` and replace it with `j_sling_security_check` and click Save All.
6) Log out of CRX DE Lite.
7) Open AEM Configuration Manager. The default URL is http://server:port/lc/system/console/configMgr/.
8) Locate and open the Day CRX Token Authentication Handler configuration.
9) Set value of the Alternate Authentication URL to `j_sling_security_check` and click Save.
10) Log out of the Configuration Manager.
11) Refresh browser cache.
12) Turn on the Global security
    a) Open administrative console of WebSphere application server
    b) Click Security > Global security. In Administrative Security, select Enable Administrative Security, click Apply, and click Save. It saves directly to the master configuration

c) Restart the WebSphere application server.

Enable WebSphere Global Administrative Security on the publish instance

Perform the following steps to enable WebSphere Global Administrative Security on AEM Forms publish instance:

1) Locate and extract the bundle.jar file for the CRXDE Lite bundle. Locate the file docroot/js/CRX/util/Util.js within that JAR, and search and replace**j_security_check** with **j_sling_security_check**. Use the following steps to locate and extract the CRXDE Lite JAR file:

   NOTE: Use a tool, such as WinRAR, that allows you to extract, edit, and re-inject the file without expanding the entire archive.

   a) Open your CRX Console to the Bundles page at **http://[server]:[port]/lc/system/console/bundles** and search for **Adobe Granite CRXDE Lite** and expand it. Note down the number (the bundle ID under the heading ID) on the left side of **Adobe Granite CRXDE Lite**.

   b) Go to the CRX Repository on disk. Within the crx-repository directory, go to \launchpad\felix\bundle###\version0.0 - where ### is the number of the bundle from the **http://[server]:[port]/lc/system/console/bundles** page.

   c) Copy the bundle.jar file.

2) In Config Manager, **http://host:port/lc/system/console/configMgr**, go to **Day CRX Token Authentication Handler** and set **Alternate Authentication URL** to **j_sling_security_check**.

3) In Config Manager, go to **Apache Sling Authentication Service** and set the **Authentication URI Suffices** to **/j_sling_security_check**.

4) Using CRXDE Lite, **http://[host]:[port]/crx/de/index.jsp**, copy the below files from their current location under /libs/** to new /apps/** locations. The paths under /libs/, such as /cq/core/components/login, should be created if they do not exist such that the copied files reside in the same structure under /apps.

Copy the file	To the location
/libs/granite/core/components/login/login.jsp	/apps/granite/core/components/login/login.jsp
/libs/social/connect/components/sociallogin/sociallogin.jsp	/apps/social/connect/components/sociallogin/sociallogin.jsp
/libs/social/connect/components/sociallogin/cqlogin.jsp	/apps/social/connect/components/sociallogin/cqlogin.jsp
/libs/social/connect/components/socialconnect/socialconnect.jsp	/apps/social/connect/components/socialconnect/socialconnect.jsp
/libs/foundation/components/login/login.jsp	/apps/foundation/components/login/login.jsp

5) Open each of the new copied files under /apps/ and search/replace **j_security_check** with **j_sling_security_check**. Ensure that you save the changes.

6) In CRXDE Lite, go to **/etc/clientlibs/social/commons/scf/session.js** and search/replace **j_security_check** with **j_sling_security _check**.
7) Optionally, if you are using GeoMetrixx Outdoors, modify the following files in the same manner as in step 4. The GeoMetrixx Outdoors website already overlays some of the files.
   – /apps/community-components/components/basepage/clientlibs/basepage.js
   – /apps/geometrixx-outdoors/components/social/sociallogin/cqlogin.jsp
   – /apps/geometrixx-outdoors/components/social/connect/components/socialconnect/socialconnect.jsp
8) Restart AEM.

7.7.

7.8.

7.9. Configure CSIv2 inbound transport

On the default Global Security enabled installation of IBM WebSphere, CSIv2 inbound transport option is set to SSL-required. This configuration causes Output and Forms components to fail. Ensure that you change CSIv2 inbound transport option to SSL-Supported: To change the option:

1) Log in to IBM WebSphere administration console.
2) Expand **Security**, and then click **Global security**.
3) In the Authentication section, expand **RMI/IIOP security**, and then click **CSIv2 inbound communications**
4) In CSIv2 Transport Layer section, set value of **Transport** to **SSL-Supported**.
5) Click **Apply**.

7.10. Configuring Connector for EMC Documentum

If you installed Connector for EMC Documentum as part of your AEM Forms on JEE, complete the following procedure to configure the service to connect to the Documentum repository.

Configure Connector for EMC Documentum

1) Locate the adobe-component-ext.properties file in the *[appserver root]*/profiles/[profile name] folder (if the file does not exist, create it).
2) Add a new system property that provides the following Documentum Foundation Classes JAR files:
   – dfc.jar
   – aspectjrt.jar

- log4j.jar
- jaxb-api.jar
- configservice-impl.jar
- configservice-api.jar
- commons-codec-1.3.jar
- commons-lang-2.4.jar

The new system property should take on this form:

`[component id].ext=[JAR files and/or folders]`

For example, using default Content Server and Documentum Foundation Classes installations, add to the file one of the following system properties on a new line, with no line breaks, and end the line with a carriage return:

3)

4) Open a web browser and enter this URL:

   `http://[host]:[port]/adminui`

5) Log in using the default user name and password:

   ***User name**: administrator*

   ***Password**: password*

6) Navigate to **Services** > **Connector for EMC Documentum** > **Configuration Settings** and perform these tasks:
   - Type all the required Documentum repository information.
   - To use Documentum as your repository provider, under Repository Service Provider Information, select **EMC Documentum Repository Provider**, and then click **Save**. For more information, click the Help link in the upper-right corner of the page in the Administration Help.

7) (Optional) Navigate to **Services** > **Connector for EMC Documentum** > **Repository Credentials Settings**, click **Add**, specify the Docbase information, and then click **Save**. (For more information, click **Help** in the upper-right corner.)

8) If the application server is not currently running, start the server. Otherwise, stop and then restart the server.

9) Open a web browser and enter this URL.

   `http://[host]:[port]/adminui`

10) Log in using the default user name and password:

    ***User name**: administrator*

    ***Password**: password*

11) Navigate to **Services** > **Applications and Services** > **Service Management** and select these services:
    - EMCDocumentumAuthProviderService
    - EMCDocumentumContentRepositoryConnector
    - EMCDocumentumRepositoryProvider
    - EMCDocumentumECMUpgradeService

12) Click **Start**. If any of the services do not start correctly, check the settings you completed earlier.
13) Do one of the following tasks:
    – To use the Documentum Authorization service (EMCDocumentumAuthProviderService) to display content from a Documentum repository in the Resources view of Workbench, continue with this procedure. Using the Documentum Authorization service overrides the default AEM Forms on JEE authorization and must be configured to log in to Workbench using Documentum credentials.
    – To use the AEM Forms on JEE repository, log in to Workbench by using the AEM Forms on JEE super administrator credentials (by default, *administrator* and *password*).

    You have now completed the required steps for this procedure. Use the credentials provided in this step for accessing the default repository in this case and use the default AEM Forms on JEE authorization service.
14) Enable Remoting and EJB endpoints by doing these tasks:
    – Log in to administration console and click **Home > Services > Application and Services > Service Management**.
    – Filter the category *Connector for EMC Documentum a*nd click **EMC DocumentumContentRepositoryConnector:1.0.**
    – Select the disabled endpoints and enable them.
15) Restart the application server.
16) Log in to administration console and click **Settings** > **User Management** > **Domain Management**.
17) Click **New Enterprise Domain**, and type a domain ID and name. The domain ID is the unique identifier for the domain. The name is a descriptive name for the domain.

    NOTE: (WebLogic and WebSphere only) *When using DB2 for your AEM Forms on JEE database, the maximum permitted length of the ID is 100 single-byte (ASCII) characters or 50 double-byte characters or 25 four-byte characters. (See "Adding enterprise domains" in administration help.)*
18) Add a custom authentication provider:
    – Click **Add Authentication**.
    – In the Authentication Provider list, select **Custom**.
    – Select **EMCDocumentumAuthProvider** and then click **OK**.
19) Add an LDAP authentication provider:
    – Click **Add Authentication**.
    – In the Authentication Provider list, select **LDAP**, and then click **OK**.
20) Add an LDAP directory:
    – Click **Add Directory**.
    – In the Profile Name box, type a unique name, and then click **Next**.
    – Specify values for the **Server**, **Port**, **SSL**, **Binding**, and **Populate page with** options. If you select User for the Binding option, you must also specify values for the **Name** and **Password** fields.
    – (Optional) Select **Retrieve Base DN** to retrieve base domain names, as required.

– Click **Next**, configure the user settings, click **Next**, configure group settings, as required, and then click **Next**.

*For details about the settings, click **User Management Help** in the upper-right corner of the page.*

21) Click **OK** to exit the Add Directory page and then click OK again.
22) Select the new enterprise domain and click **Sync Now**. Depending on the number of users and groups in your LDAP network and the speed on your connection, the synchronization process may take several minutes.

*(Optional) To verify the status of the synchronization, click **Refresh** and view the status in the Current Sync State column.*

23) Navigate to **Settings > User Management > Users and Groups**.
24) Search for users that were synchronized from LDAP and perform these tasks:
    – Select one or more users and click **Assign Role**.
    – Select one or more AEM Forms on JEE roles and click **OK**.
    – Click **OK** a second time to confirm the role assignment.

    *Repeat this step for all users that you assign roles to. For more information, click **User Management Help** in the upper-right corner of the page.*

25) Start Workbench and log in by using the credentials for the Documentum repository:

    ***Username**: [username]@[repository_name]*

    ***Password**: [password]*

    After you log in, the Documentum repository appears in the Resources view within Workbench. If you do not log in using the username@repository_name, Workbench attempts to log in to the default repository.
26) (Optional) To install the AEM Forms on JEE Samples for Connector for EMC Documentum, create a Documentum repository named Samples, and then install the samples in that repository.

After you configure the Connector for EMC Documentum service, see *AEM Forms on JEE administration help* for information about configuring Workbench with your Documentum repository.

Add support for multiple connection brokers

AEM Forms on JEE Configuration Manager supports configuring only one connection broker. Use AEM Forms on JEE Administrator Console to add support for multiple connection brokers:

1) Open AEM Forms on JEE Administrator Console.
2) Navigate to Home > Services > Connector for EMC Documentum > Configuration Settings.
3) In the **Connection broker Host Name or IP Address,** enter comma seperated list of hostnames of different connection brokers. For example, host1, host2, host3.
4) In the **Port Number of Connection broker**, enter comma seperated list of the ports of corresponding connection brokers. For example, 1489, 1491, 1489.
5) Click **Save**.

7.11. Configuring the Connector for IBM Content Manager

NOTE: AEM forms supports IBM Content Manager. See the Supported Platform Combinations document and make sure your ECM is upgraded to the supported version.

If you installed the Connector for IBM Content Manager as part of your AEM Forms installation, complete the following procedure to configure the service to connect to the IBM Content Manager datastore.

Configure Connector for IBM Content Manager

1) Locate the adobe-component-ext.properties file in the *[appserver root]*/profiles/[profile name] folder. If the file does not exist, create it.
2) Add a new system property that provides the location of the following IBM II4C JAR files:
   - cmb81.jar
   - cmbcm81.jar
   - cmbicm81.jar
   - cmblog4j81.jar
   - cmbsdk81.jar
   - cmbutil81.jar
   - cmbutilicm81.jar
   - cmbview81.jar
   - cmbwas81.jar
   - cmbwcm81.jar
   - cmgmt

   NOTE: cmgmt is not a JAR file. On Windows, by default, this folder is at `C:/Program Files/IBM/db2cmv8/`.
   - common.jar
   - db2jcc.jar
   - db2jcc_license_cisuz.jar
   - db2jcc_license_cu.jar
   - ecore.jar
   - ibmjgssprovider.jar
   - ibmjsseprovider2.jar
   - ibmpkcs.jar
   - icmrm81.jar
   - jcache.jar
   - log4j-1.2.8.jar
   - xerces.jar
   - xml.jar
   - xsd.jar

The new system property looks similar to the following:

```
[component id].ext=[JAR files and/or folders]
```

For example, using a default DB2 Universal Database Client and II4C installation, in the file, add the following system property on a new line, with no line breaks, and end the line with a carriage return:

```
C:/Program Files/IBM/db2cmv8/cmgmt,
C:/Program Files/IBM/db2cmv8/java/jre/lib/ibmjsseprovider2.jar,
C:/Program Files/IBM/db2cmv8/java/jre/lib/ibmjgssprovider.jar,
C:/Program Files/IBM/db2cmv8/java/jre/lib/ibmpkcs.jar,
C:/Program Files/IBM/db2cmv8/java/jre/lib/xml.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbview81.jar,
C:/Program Files/IBM/db2cmv8/lib/cmb81.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbcm81.jar,
C:/Program Files/IBM/db2cmv8/lib/xsd.jar,
C:/Program Files/IBM/db2cmv8/lib/common.jar,
C:/Program Files/IBM/db2cmv8/lib/ecore.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbicm81.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbwcm81.jar,
C:/Program Files/IBM/db2cmv8/lib/jcache.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbutil81.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbutilicm81.jar,
C:/Program Files/IBM/db2cmv8/lib/icmrm81.jar,
C:/Program Files/IBM/db2cmv8/lib/db2jcc.jar,
C:/Program Files/IBM/db2cmv8/lib/db2jcc_license_cu.jar,
C:/Program Files/IBM/db2cmv8/lib/db2jcc_license_cisuz.jar,
C:/Program Files/IBM/db2cmv8/lib/xerces.jar,
C:/Program Files/IBM/db2cmv8/lib/cmblog4j81.jar,
C:/Program Files/IBM/db2cmv8/lib/log4j-1.2.8.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbsdk81.jar,
C:/Program Files/IBM/db2cmv8/lib/cmbwas81.jar
```

3) If the application server is not currently running, start the server; otherwise, stop and then restart the server.

You can now connect to the IBM Content Manager datastore from the IBMCMConnectorService Property Sheets by using the Use User Credentials as the login mode.

You have now completed the required steps for this procedure.

(Optional) If you want to connect to IBM Content Manager datastore from IBMCMConnectorService Property Sheets by using the Use Credentials From Process Context as the login mode, complete the following procedure.

Connect using Use Credentials from process context login mode

1) Open a web browser and enter this URL:
   http://[host]:[port]/adminui
2) Log in using the super administrator credentials. Default values set during installation are:

User name: *administrator*

Password: *password*

3) Click **Services** > **Connector for IBM Content Manager**

4) Type all of the required repository information and click **Save**. For more information about the IBM Content Manager repository information, click the **Help** link in the upper-right corner of the page.

5) Do one of these tasks:
   – To use the IBM Content Manager Authorization service IBMCMAuthProvider to use content from an IBM Content Manager datastore, in the Processes view of Workbench, continue with this procedure. Using the IBM Content Manager Authorization service overrides the default AEM Forms authorization and must be configured to log in to Workbench by using IBM Content Manager credentials.
   – To use the System Credentials provided in step 4 to use content from an IBM Content Manager datastore, in the Processes view of Workbench, log in to Workbench by using the AEM Forms super administrator credentials (by default, *administrator* and *password*). You have now completed the required steps for this procedure. The System Credentials that are provided in step 4 use the default AEM Forms authorization service for accessing the default repository in this case.

6) Log in to the administration console, and click **Settings** > **User Management** > **Domain Management**.

7) Click **New Enterprise Domain** and type a domain ID and name. The domain ID is the unique identifier for the domain. The name is a descriptive name for the domain. ***NOTE:*** *When using DB2 for your AEM Forms database, the maximum permitted length of the ID is 100 single-byte (ASCII) characters or 50 double-byte characters or 25 four-byte characters. (See "Adding enterprise domains" in administration help.)*

8) Add a custom authentication provider:
   – Click **Add Authentication**.
   – In the **Authentication Provider** list, select **Custom**, and then select **IBMCMAuthProviderService**and click **OK**.

9) Add an LDAP authentication provider:
   – Click **Add Authentication**.
   – In the **Authentication Provider** list, select **LDAP** and then click **OK**.

10) Add an LDAP directory:
   – Click**Add Directory**.
   – In the **Profile Name** box, type a unique name, and then click **Next**.
   – Specify values for the **Server**, **Port**, **SSL**, **Binding**, and **Populate page with** options. If you select **User** for the **Binding** option, you must also specify values for the **Name** and **Password** fields. (Optional) Select **Retrieve Base DN** to retrieve base domain names, as required. When finished, click **Next**.
   – Configure the user settings, click **Next**, configure group settings as required, and then click **Next**.

*For details about the above settings, click the **Help** link in the upper-right corner of the page.*

11) Click **OK** to exit the Add Directory page and click **OK** again.
12) Select the new enterprise domain and click **Sync Now**. Depending on the number of users and groups in your LDAP network and the speed on your connection, the synchronization process may take several minutes.
13) To verify the status of the synchronization, click **Refresh** and view the status in the **Current Sync State** column.
14) Navigate to **Settings** > **User Management** > **Users and Groups**.
15) Search for users that were synchronized from LDAP and do these tasks:
    – Select one or more users and click **Assign Role**.
    – Select one or more AEM Forms roles and click **OK**.
    – Click **OK** a second time to confirm the role assignment.

    *Repeat this step for all users that you want to assign roles to. For more information, click the **Help** link in the upper-right corner of the page.*
16) Start Workbench and log in using the following credentials for IBM Content Manager datastore:

    ***Username:** [username]@[repository_name]*

    ***Password:** [password]*

    *The IBM Content Manager datastore can now be used in the Processes view within Workbench when the login mode for IBMCMConnectorService orchestrable components is selected as**Use Credentials from process context.***

7.12. Configuring the Connector for IBM FileNet

If you installed Connector for IBM FileNet as part of your AEM Forms, you must configure the service to connect to the FileNet object store.

Complete the following procedure to configure Connector for IBM FileNet.

1) Log in to WebSphere Administrative Console, click **Servers > Server Types > WebSphere application servers**, and then click the name of the server instance to configure (for example, server1).
2) Under Server Infrastructure, click **Java and forms workflow** > **Process Definition**.
3) Under Additional Properties, click **Java Virtual Machine**.
4) Click **Apply** and then click **Save to Master Configuration**.
5) Locate the adobe-component-ext.properties file in the*[appserver root]*/profiles/[profile name] folder (if the file does not exist, create it).
6) Add a new system property that provides the location of these FileNet Application Engine JAR files:

    NOTE: Add the pe.jar file only if your deployment uses the IBMFileNetProcessEngineConnector service. The new system property should reflect this structure:

    ```
    [component id].ext=[JAR files and/or folders]
    ```

    NOTE: Do not overwrite the existing contents of the properties file. Simply append the new system property to the contents.

For example, using a default FileNet Application Engine installation on a Windows operating system, add the following system property on a new line with no line breaks and end the line with a carriage return:

NOTE: The following text contains formatting characters for line breaks. If you copy this text to a location outside this document, remove the formatting characters when you paste it to the new location.

```
com.adobe.livecycle.ConnectorforIBMFileNet.ext=
C:/Program Files/FileNet/AE/CE_API/lib2/javaapi.jar,
C:/Program Files/FileNet/AE/CE_API/lib2/log4j-1.2.13.jar
```

7) (FileNet Process Engine Connector only) Configure the connection properties for the process engine as follows:

   – Using a text editor, create a file with the following content as a single line and end the line with a carriage return:

     (FileNet 5.2 only)

     ```
     RemoteServerUrl =
     cemp:http://[contentserver_IP]:[contentengine_port]/wsi/FNCEWS40MTOM
     /
     ```

   – Save the file as WcmApiConfig.properties in a separate folder, and add the location of the folder that contains the WcmApiConfig.properties file to the adobe-component-ext.properties file.

     For example, if you save the file as c:/pe_config/WcmApiConfig.properties, add the path c:/pe_config to the adobe-component-ext.properties file.

     NOTE: The filename is case-sensitive.

8) Locate the file wsjaas.conf and add the following lines:

```
FileNetP8 {com.filenet.api.util.WSILoginModule required;};
FileNetP8WSI {com.filenet.api.util.WSILoginModule required;};
FileNetP8Engine
{com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy
required delegate=com.ibm.ws.security.common.auth.module.
WSLoginModuleImpl;};
FileNetP8Server
{com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy
required delegate=com.ibm.ws.security.common.auth.module.
WSLoginModuleImpl;};
FileNetP8KerberosService
{com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy
required delegate=com.filenet.engine.authentication.kerberos.login.
KrbServiceLoginModule;
com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy required
delegate=com.ibm.ws.security.server.lm.ltpaLoginModule;
com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy required
delegate=com.ibm.ws.security.server.lm.
wsMapDefaultInboundLoginModule;};
```

NOTE: By default, the wsjaas.conf file is located in the folder *[appserver root]*/profiles/*[profile name]/properties/.*

9) If the application server is not currently running, start the server. Otherwise, stop and then restart the server.

10) (*Applicable only if IBM FileNet and AEM Forms are installed on the same WebSphere application server*) Verify that these settings have been implemented correctly in the WebSphere Administrative Console by doing the following:
   – In the WebSphere Administrative Console navigation tree, click **Security > Global security.**
   – Under Authentication, click **Java Authentication and Authorization Service > Application logins**.
   – Click the **FileNetP8** application login, and then click **JAAS login modules**.

     If the values on this page do not match the following, modify them:

     ***Module class name**: "com.filenet.api.util.WSILoginModule"*

     ***Authentication Strategy**: REQUIRED*

     ***Module Order**: 1*

     *Click **OK** or **Apply**, and then click **Save directly to master configuration**.*

11) Open a web browser and enter this URL:

   `http://[host]:[port]/adminui`

12) Log in using the default user name and password:

   ***User name**: administrator*

   ***Password**: password*

13) Click **Services** > **Connector for IBM FileNet**.

14) Provide the Content Engine URL. For example, `cemp:http://ContentEngineHostNameorIP:port/wsi/FNCEWS40MTOM?jaasConfigurationName=FileNetP8WSI`

15) Provide all the required FileNet repository information and, under Repository Service Provider Information, select **IBM FileNet Repository Provider**.

   *If your deployment uses the optional process engine service, under Process Engine Settings, select **Use Process Engine Connector Service** and specify the process engine settings. For more information, click the **Help** link in the upper-right corner of the page.*

   NOTE: The credentials that you provide in this step are validated later when you start the IBM FileNet repository services. If the credentials are not valid, an error is thrown and the services will not start.

16) Click **Save** and navigate to **Services** > **Applications and Services** > **Service Management**.

17) Select the check box next to **IBMFileNetProcessEngineConnector** (if configured) and then click **Start.**

18) Do one of the following tasks:
   – To use the FileNet Authorization service (IBMFileNetAuthProviderService) to display content from a FileNet object store in the Resources view of Workbench, continue with this procedure. Using the FileNet Authorization service overrides the default AEM Forms authorization and must be configured to log in to Workbench by using FileNet credentials.

- To use the AEM forms repository, log in to Workbench by using the super administrator credentials (by default, *administrator* and *password*). The credentials provided in step 16 use the default AEM Forms authorization service for accessing the default repository in this case.

19) Enable Remoting and EJB endpoints by doing these tasks:
   - Log in to administration console and click **Home > Services > Application and Services > Service Management**.
   - Filter the category *Connector for IBM FileNet* and click **IBMFileNetContentRepositoryConnector:1.0.**
   - Select the disabled endpoints and enable them.
20) Restart your application server.
21) Log in to administration console and click **Settings** > **User Management** > **Domain Management**.
22) Click **New Enterprise Domain** and then type a domain ID and name. The domain ID is the unique identifier for the domain. The name is a descriptive name for the domain.

    When using DB2 for your AEM Forms database, the maximum permitted length of the ID is 100 single-byte (ASCII) characters or 50 double-byte characters or 25 four-byte characters. (See "Adding enterprise domains" in Administration Help.)
23) Add a custom authentication provider:
   - Click **Add Authentication**.
   - In the **Authentication Provider** list, select **Custom**.
   - Select **IBMFileNetAuthProviderService** and then click **OK**.
24) Add an LDAP authentication provider:
   - Click **Add Authentication**.
   - In the **Authentication Provider** list, select **LDAP** and then click **OK**.
25) Add an LDAP directory:
   - Click**Add Directory** and, in the **Profile Name** box, type a unique name, and then click **Next**.
   - Specify values for the **Server**, **Port**, **SSL**, **Binding**, and **Populate page with** options. If you select **User** for the **Binding** option, you must also specify values for the **Name** and **Password** fields.
   - (Optional) Select **Retrieve Base DN** to retrieve base domain names, as required. When finished, click **Next**.
   - Configure the user settings, click **Next**, configure group settings as required, and then click **Next**.

     *For details about the settings, click **Help** link in the upper-right corner of the page.*
26) Click **OK** to exit the Add Directory page, and then click **OK** again.
27) Select the new enterprise domain and click **Sync Now**. Depending on the number of users and groups in your LDAP network and the speed on your connection, the synchronization process may take several minutes.

    *(Optional) To verify the status of the synchronization, click **Refresh** and view the status in the **Current Sync State** column.*
28) Navigate to **Settings** > **User Management** > **Users and Groups**.

29) Search for users that were synchronized from LDAP and perform these tasks:
   – Select one or more users and click **Assign Role**.
   – Select one or more AEM Forms roles and click **OK**.
   – Click **OK** a second time to confirm the role assignment.

   *Repeat this step for all users you want to assign roles to. For more information, click the **Help** link in the upper-right corner of the page.*
30) Start Workbench and log in using the following credentials for the IBM FileNet repository:

   ***User name:** [username]@[repository_name]*

   ***Password:** [password]*

   The FileNet object store should now be visible in the Resources view within Workbench. If you do not log in using the username@repository name, Workbench attempts to log in to the default repository specified in step 16.
31) (Optional) If you intend to install the AEM Forms Samples for Connector for IBM FileNet, create a FileNet object store named *Samples* and install the samples in that object store.

   After you configure Connector for IBM FileNet, it is recommended that you see administration help for information about configuring Workbench functions properly with your FileNet repository.

7.13. Migrate adaptive forms and Correspondence Management assets

The migration utility makes assets of earlier versions compatible with AEM 6.4 forms. You can download the utility from AEM package share. For detailed steps, see https://helpx.adobe.com/experience-manager/6-4/forms/using/migration-utility.html.

Remove Adobe Correspondence Management Utilities Bundle

AEM Forms shipped Correspondence Management Utilities Bundle with previous releases of AEM Forms. The bundle is not required on AEM 6.4 Forms setup. Perform the following steps to uninstall the bundle:

1) Open the http://[server]:[port]/lc/system/console/bundles URL in a browser window.
2) Search and open the Adobe Correspondence Management Utilities Bundle.
3) Click the uninstall icon to remove the bundle.

Reconfigure Adobe Sign

f you had Adobe Sign configured in the previous version of AEM Forms, then reconfigure Adobe Sign from AEM Cloud services. For more details, see https://helpx.adobe.com/content/help/en/aem-forms/6-4/adobe-sign-integration-adaptive-forms.html.

Reconfigure analytics and reports

In AEM 6.4 Forms, traffic variable for source and success event for impression are not available. So, when you upgrade to AEM 6.4 Forms, AEM Forms stops sending data to Adobe Analytics server and analytics reports for adaptive forms and adaptive document are not available. Moreover, AEM 6.4 Forms introduces traffic variable for the version of form analytics and success event for the amount of time spent on a field. So, reconfigure analytics and reports for your AEM Forms environment. For detailed steps, see https://helpx.adobe.com/content/help/en/aem-forms/6-4/configure-analytics-forms-documents.html.

Methods to calculate average fill time for forms and average read time for adaptive documents have changed. So, when you upgrade to AEM 6.4 forms, the old data from previous AEM Forms release for these metrics is available only in Adobe Analytics. It is not visible in AEM Forms analytics reports. For these metrics, AEM Forms analytics reports display data which is captured after performing the upgrade.

7.14. Configure the ContentRepositoryConnector service

By default, the ContentRepositoryConnector service is configured to use URL http://localhost:8080/lc/crx/server/. Perform the following steps to configure the service for your environment:

1) Log in to AEM Forms Admin UI using credentials administrator/password. The default URL of Admin UI is http://[IP]:[Port]/adminui.
2) Navigate to Services > Application and Services > Service Management.
3) Search and open the ContentRepositoryConnector service for editing.
4) Open the Configuration tab and replace the default URL in the Experience Management Server field with the URL of your environment.

IP

IP address of the machine on which application server is running.

Port

Port number which AEM Forms is using. The default port number for JBoss, WebLogic, and WebSphere 8080, 8001, and 9080, respectively.

8. Appendix - Additional system requirements

PDF Generator, AEM Forms IPv6 support, Connectors for IBM File Net, Documentum, IBM Content Manager, and Forms, Output and ConvertPDF services, and some other components require a few additional settings. Perform these settings only if you are configuring these capabilities.

8.1. Additional requirements for Linux and UNIX based platforms

NOTE: On Linux and UNIX platforms, AEM Forms on JEE installer uses the JDK installed on the machine. Therefore, you must ensure to install the supported JDK version. On other operating systems, the installer uses the JVM bundled with the installer.

Installing and configuring UTF-8

When installing AEM Forms on JEE on Linux and UNIX based operating systems, you must install and configure the US English version of UTF-8 locale if it is not already installed. You will need the install media (CDs or DVDs) for the operating system to perform this task.

NOTE: On Linux platforms, this locale is installed by default and is called en_US.utf8. It can be verified by using the `locale -a` command.

Linux

On Linux operating systems, ensure the following:

- **All Linux distributions:**
  - Ensure that X Window libraries are installed on your operating system. This is required for PDF Generator and Forms. See documentation for your operating system for more information.
  - Install the latest version of 32-bit libcurl, libcrypto, and libssl libraries.
  - Ensure that the directories /usr/lib/X11/fonts and /usr/share/fonts exists. If the directories do not exist, then use the ln command to create a symbolic link from /usr/share/X11/fonts to /usr/lib/X11/fonts and another symbolic link from /usr/share/fonts to /usr/share/X11/fonts. Also ensure that the courier fonts are available at /usr/lib/X11/fonts
  - Ensure that all the fonts (Unicode and non-unicode) are available in the /usr/share/fonts or /usr/share/X11/fonts directory.
  - On RedHat Enterprise Linux 7.x, the courier fonts are not available, download the font-ibm type1-1.0.3.zip archive. Extract the archive at /usr/share/fonts. Create a symbolic link from /usr/share/X11/fonts to /usr/share/fonts. Delete all the .lst font cache files from the Html2PdfSvc/bin and /usr/share/fonts directories.
- **SUSE Linux:** You must install the glibc-locale-32bit library that ships with SUSE Linux Enterprise Server; otherwise, AEM Forms on JEE will not generate PDF files. This library file is not installed by

default, you must use YaST to install it. (See the SUSE Linux Enterprise Server documentation for details.)

Configuring the file limit values on non-Windows operating systems

To avoid StuckThread issues on a non-Windows operating systems environment, add or increase the rlim values in the /etc/system file.

1) (**Linux**) Locate and open the /etc/security/limits.conf file.
2) (**Linux**) Add the following lines to the /etc/security/limits.conf file:

```
<app_group> soft nofile 65553
<app_group> hard nofile 65553
```

Replace <app_group> with the user group who will run the application server. You may also replace < app_group > with an asterisk (*) to match all users and user groups.

3) Save and close the file.
4) Restart your computer.

Verify the updated settings

1) Launch a new shell.
2) Type `ulimit -n` and press **Enter**.
3) Verify the value returned matches the `rlim` values you have set.

8.2. LDAP configuration

This configuration is optional and required only if you are using an LDAP directory to authenticate users.

When you upgrade Rights Management, LDAP configuration settings are automatically migrated.

If you do not have an existing LDAP server and database, install and configure your LDAP server and database according to the vendor's documentation. Make note of the LDAP administrator name and password to use during the AEM Forms on JEE configuration process. Configure AEM Forms on JEE to connect with the LDAP database after you install and deploy your services that are part of AEM Forms on JEE. This configuration is done by using the User Manager service.

See the Upgrading to AEM Forms on JEE document for your application server.

8.3. Upgrade: Processes with document form variables and digital signatures

If you are upgrading from a previous version of AEM Forms on JEE and changing your AEM Forms on JEE Server, you may disrupt any processes that use the document form variable or digital signatures. This is because these forms are rendered only once, setting the submit URL. Changing the server breaks the certificate.

Choose the solution that is most appropriate for your AEM Forms on JEE environment from the following solutions:

Solution 1: Complete all processes that use a form document variable before you upgrade or move to the remote server. Use this method if you maintain legacy AEM Forms on JEE servers after the upgrade. This approach also eliminates the need for*throw-away* work to be done to manage the redirection of the form submissions. This method is not practical if you have many outstanding processes.

Solution 2: If the server being upgraded is not being decommissioned, a reverse proxy approach is preferable. With this method, you maintain the reverse proxy on the old system until all the migrated processes are completed.

S olution 3: You can use the Apache `mod_rewrite` module to modify the embedded URLs in each form as they are delivered to the client.

NOTE: If your AEM Forms on JEE implementation is on IPv6, clients using EJB invocation for PDF creation report exceptions. This is a known issue attributed to Sun JDK 6.

8.4. Additional requirements for PDF Generator

NOTE: You cannot use the Shared Printer Protocol for the `SendToPrinter` API on Windows 2016 machines that have PDF Generator deployed on them. Use alternate protocols like CIFS or Direct IP.

User account for Windows

You must use a user account with administrator privileges for the following tasks:

- Installing Microsoft Office
- Installing PDF Generator
- Installing Acrobat for PDF Generator
- Running the application server process

NOTE: When you add a users for PDF Generator, grant the user running the application server with the Replace a process level token privilege.

User account for non-Windows operating systems

You must use a user account with administrator privileges for the following tasks:

- Installing PDF Generator
- Running the application server process
- Running the `sudo` command

NOTE: When you add a users for PDF Generator, grant the user running the application server with the Replace a process level token privilege.

Using 64-bit application servers with PDF Generator

Ensure that a 32-bit Java 8 JDK is installed in addition to the 64-bit one the application server uses. Set the environment variable `JAVA_HOME_32`. This variable is required to point to a 32-bit JDK on systems where a 64-bit application server is in use. The specific path varies based on the installation directory you specified and the operating system you are installing on.

NOTE: You need to install the 32-bit Sun JDK and configure `JAVA_HOME_32` to point to the directory where it resides. Review Sun Java 8s Release Notes > Supported System Configurations and download the 32-bit version for your operating system.

IMPORTANT: Ensure that`JAVA_HOME_32` is set only as an environment variable and is not included in the PATH. If `JAVA_HOME_32` *is included in the PATH, Java core dumps may appear during EAR deployment or when you restart the server.*

Set the Windows JAVA_HOME_32 variable

1) Select **Start**> **Control Panel**>**System**.
2) Click the **Advanced System Settings**tab**.**
3) Click **Environment Variables** and, under System Variables, click **New.**
4) Enter the environment variable `JAVA_HOME_32`. This value is the directory that contains the JDK. For example, type the following:

```
C:\Program Files (x86)\Java\jdk1.8.0_74
```

Set the JAVA_HOME_32 variable on non-Windows operating systems

For Linux, set the JAVA_HOME_32 variable for the supported JDK for Bourne and Bash shells as shown in this example:

```
JAVA_HOME_32=/opt/jdk1.8.0_74
export JAVA_HOME_32
```

Native file conversion software installation

Before you install PDF Generator, install the software that supports the file formats for which PDF conversion support is required and manually activate the licenses for the software using the user account that is used for running the application server process.

Refer to the individual licensing agreement for each native application that your AEM Forms on JEE deployment will support, and ensure that your AEM Forms on JEE deployment meets the licensing requirements specified. Typically, each AEM Forms on JEE user who will use native application support must also have an activated license on their own computer for the native application.

PDF Generator can be extended to convert additional file types to PDF files by using third party native file conversion applications. For the complete list of supported application and file formats, see Supported Platform Combinations document.

NOTE: PDF Generator uses native applications to convert the supported file formats to PDF. Unless otherwise indicated, only the German, French, English, and Japanese versions of these applications and plat-

forms (operating systems) are supported. Also, ensure that the supported languages are installed on underlying platform (operating system).

NOTE: AEM Forms on JEE supports only 32-bit editions of all the above mentioned software.

NOTE: OpenOffice 3.4 or later must be installed on the server to convert the documents created in version 3.4.

NOTE: Native file conversion software might have initial registration/activation dialogs. Dismiss all the initial registration/activation dialogs for all the PDFG user accounts configured on the server.

NOTE: On Linux platform, OpenOffice must be installed under `/root` user. If OpenOffice is installed for specific users, PDFG might not be able to convert OpenOffice documents.

NOTE: End users should not use software applications used by PDF Generator on the server. This can lead to interference with PDF Generator conversions.

You do not need to install a native software application to convert the following native file formats:

- Print files (PS, PRN, EPS)
- Web files (HTML)
- Image files (JPEG, GIF, BMP, TIFF, PNG)

Installing Acrobat for PDF Generator

Install Acrobat DC Pro before running the AEM Forms on JEE installer. Ensure that you launch Acrobat at least once after installing it to avoid PDF Generator configuration issues. Dismiss all modal dialog boxes that appear on launching Acrobat. ***NOTE:*** *Ensure that Acrobat is installed using the same user account that you will use to install AEM Forms on JEE.*

However, if AEM Forms on JEE is installed and Acrobat DC Pro is not installed, install Acrobat DC Pro and then run the Acrobat_for_PDFG_Configuration.bat script, located in the folder *[aem-forms root]*\pdfg_-config. Otherwise, PDF conversions will fail.

The Configuration Manager sets the Acrobat_PATH (case-sensitive) environment variable automatically. You can also choose to set it manually, see Settingenvironmentvariables. Restart your application server after setting the environment variable.

Configure Acrobat to use SHX fonts (Windows only)

NOTE: Perform these steps to configure Acrobat if you want PDF Generator to use SHX fonts to convert AutoCAD DWG files without installing AutoCAD. Also, these steps need to be performed for all user accounts configured in administration console.

1) Open Acrobat.
2) Select **Edit > Configurations**.
3) Select **Convert to PDF > Autodesk AutoCAD**.
4) Click **Edit Settings**.
5) Click **Configuration Preferences**.
6) Click **Browse** next to the SHX Font File Search Path and specify the path to the SHX font file.
7) Click **OK** on each opened dialog.

QuickTime 7

PDF Generator requires that QuickTime 7.7.9 or later (Player or Pro) be installed if you want to convert video embedded in files, such as PowerPoint presentations to PDF multimedia files. This application is available from the Apple Downloads site.

Setting environment variables

You must set the environment variables in Windows if you plan to create PDF documents from applications such as Photoshop and WordPerfect.

The names of these environment variables are listed here:

- `Notepad_PATH`
- `OpenOffice_PATH`
- `WordPerfect_PATH`
- `Acrobat_PATH`

These environment variables are optional and need to be set only if you plan to use the corresponding application to convert PDF files through PDF Generator. The value of the environment variable should contain the absolute path of the executable that is used to start the corresponding application.

Configuring PDF Generator on a Remote Machine

In case of a cluster, AEM Forms on JEE is installed only on one machine. Perform the following steps to configure PDF Generator on other machines in the cluster:

1) On the remote machine, if an earlier version of Acrobat is installed, uninstall it by using Add or Remove Programs in the Windows Control Panel.
2) Install Acrobat DC Pro by running the installer.
3) From the machine where AEM Forms on JEE is installed, copy `pdfg_config` and `plugins` folders to the remote machine under any directory.
4) On the remote machine, open /pdfg_config/ Acrobat_for_PDFG_Configuration.bat file for editing.
5) Locate and comment the `goto locationerror` line.

   Before

   ```
   goto locationerror
   ```

   After

   ```
   rem goto locationerror
   ```
6) Save and close the Acrobat_for_PDFG_Configuration.bat file.
7) Open the command prompt and run the following command:

   ```
   Acrobat_for_PDFG_Configuration.bat <Path of the pdfg_Configuration folder>
   ```

Service Control Manager command line tool

Before you complete an automatic installation of PDF Generator on Windows, ensure that the Service Control Manager command line tool, sc.exe, is installed in the Windows environment. Some Windows servers do not have this software preinstalled. By default, the sc.exe file is installed in the C:\Windows\system32 directory. Most OS installations have this tool installed. If you do not have the tool installed, it is available in the Windows Resource Kit for your specific version of Windows. To confirm that the tool is installed on your server, type `sc.exe` from a command prompt. The tools usage is returned.

NOTE: For PDF Generator to work properly, ensure that AEM Forms on JEE is running as a Windows service and the service must run under the Local System account.

Headless mode configuration

If you are running PDF Generator in a headless mode environment (that is, on a server without a monitor, keyboard, or mouse), the x11 libraries must be installed. Some flavors of Linux do not install these libraries by default; therefore, you must obtain the libraries and install them manually.

NOTE: *Activating x11 forwarding on a shell session causes the SOAP UI to create UI elements during SOAP requests, leading to request failures. To avoid request failures, you must add the* `-Djava.awt.headless=true` *JVM argument to application server startup parameters. For specific steps, see application server documentation.*

Enabling multi-threaded file conversions and multi-user support for PDF Generator

By default, PDF Generator can convert only one OpenOffice, Microsoft Word, or PowerPoint document at a time. If you enable multi-threaded conversions, PDF Generator can convert more than one of the documents concurrently by launching multiple instances of OpenOffice or PDFMaker (which is used to perform the Word and PowerPoint conversions).

NOTE: Multi-threaded file conversions (through Microsoft Office) are only supported for Microsoft Word and Microsoft PowerPoint.

NOTE: Microsoft Excel, Publisher, and Project files are not converted simultaneously. During conversion, EXCEL.exe, PUBLISHER.exe, and PROJECT.exe are watched in the task manager.

Each instance of OpenOffice or PDFMaker is launched using a separate user account. Each user account that you add must be a valid user with administrative privileges on the AEM Forms on JEE Server computer. For more information, see ConfiguringWindowsinstallation

After your AEM Forms on JEE Server is configured, add AEM Forms on JEE user accounts in administration console. See the User accounts for multi-threaded file conversions section in the AEM Forms on JEE installation guide for your application server. To enable multiuser support for native files and OpenOffice files on a Windows environment, add a minimum of three users with the following permissions.

When you add users for PDF Generator native conversions, grant the user running the application server with the Replace a process level token privilege.For more information, see *Granting the Replace a process level token privilege (Windows only)*

Dismiss initial dialogs and disable automatic updates for native applications

Converting native files from PDF Generator requires dismissing any initial registration, activation, and Improvement program dialogs with the option to not show them again. Automatic updates for these applications also needs to be disabled as these update dialogs can cause failures on a running server.

The dialogs and automatic update need to be disabled for the user running the server and all user accounts configured under PDFG Accounts for multi-user support. The dialogs need to be dismissed for all third-party applications if installed on the server:

NOTE: Ensure that you launch Adobe Acrobat Distiller at least once for all the PDFG user accounts configured on the server.

Disable error reporting on Windows Server 2012 (Optional but recommended)

While converting a document to PDF using PDF Generator on Windows Server 2012 Windows may report that the executable has encoutered a problem and needs to close. However, it does not impact the PDF conversion as it continues in the background.

To avoid receiving the error, you can disable the Windows error reporting. For more information on disabling error reporting, see https://technet.microsoft.com/en-us/library/gg232692%28v=ws.10%29.aspx.

Additional configuration required for OpenOffice on non-Windows operating systems

1) Add entries for additional users (other than the administrator who runs the AEM Forms on JEE Server) in the /etc/sudoers file. For example, if you are running AEM Forms on JEE as a user named lcadm and a server named myhost, and you want to impersonate user1 and user2, add the following entries to /etc/sudoers:

   ```
   lcadm myhost=(user1) NOPASSWD: ALL
   lcadm myhost=(user2) NOPASSWD: ALL
   ```

   This configuration enables lcadm to run any command on host 'myhost' as 'user1' or 'user2' without prompting for password.

2) Allow all the AEM Forms on JEE users to make connections to the AEM Forms on JEE Server. For example, to allow a local user named user1 the permission of making the connection to the AEM Forms on JEE Server, use the following command:

   ```
   xhost +local:user1@
   ```

   Ensure that the session with which the application server started should not get closed.

   For more details, refer to xhost command documentation.

3) Restart the server.

Multi-user support for PDF Generator

To enable multi-user support for native files and OpenOffice files on a Windows environment, a minimum of three users with the following permissions must be added. On a non-Windows operating systems platform, create at least one user.

Platform	User permissions
Windows Server	Users with administrative privileges, Read/write permission on AEM Forms on JEE temporary directory, PDF Generator temporary directory and application server installation directory.
non-Windows operating systems	Users with `sudo` privileges Read/write permission on AEM Forms on JEE temporary directory, PDF Generator temporary directory, and application server installation directory.

When you add users for PDF Generator native conversions, you must grant the user running the application server with the *Replace a process level token* privilege. See *Granting the Replace a process level token privilege (Windows only)*.

Granting the Replace a process level token privilege (Windows only)

User account that are used to start the application server should be part of the local administrators group and requires the *Replace a process level token* privilege. To provide *Replace a process level token*privilege:

1) Click Start > Run, and then type `gpedit.msc`.
2) On the Group Policy dialog box, select **Computer Configuration** > **Windows Settings** > **Security Settings** > **Local Policies** > **User Rights Assignment**, and double click **Replace a process level token**.
3) Click **Add User or Group**, add the Windows user account that is used to open the command prompt from which the application server is started.
4) Restart Windows, and then start the application server.

Symbolic link on Linux platform

To substitute required fonts in a HTML-to-PDF conversion on the Linux platform, PDF Generator creates a symbolic link that point to the /usr/share/X11/fonts directory.

Sometimes the user running the application server might not possess permissions that are necessary to create a symbolic link. On such systems; create a symbolic link `/usr/lib/X11/fonts` that point to the `/usr/share/X11/fonts` directory.

Additional requirements for Red Hat Enterprise Linux

PDF Generator requires additional RPM packages and fonts to perform conversions on RHEL. Perform the following steps to configure the PDF Generator on RHEL:

1) Install the RPM packages for your RHEL version. The following versions are for RHEL7:
   - glibc-2.12-1.25.el6.i686.rpm
   - nss-softokn-freebl-3.12.9-3.el6.i686.rpm
   - libX11-1.3-2.el6.i686.rpm
   - libxcb-1.5-1.el6.i686.rpm
   - libXau-1.0.5-1.el6.i686.rpm
   - zlib-1.2.3-25.el6.i686.rpm
   - libXext-1.1-3.el6.i686.rpm
   - fontconfig-2.8.0-3.el6.i686.rpm
   - expat-2.0.1-9.1.el6.i686.rpm
   - freetype-2.3.11-6.el6_0.2.i686.rpm
   - libSM-1.1.0-7.1.el6.i686.rpm
   - libICE-1.0.6-1.el6.i686.rpm
   - libuuid-2.17.2-12.el6.i686.rpm
   - libXrandr-1.3.0-4.el6.i686.rpm
   - libXrender-0.9.5-1.el6.i686.rpm
   - libXinerama-1.1-1.el6.i686.rpm
2) In your browser, open website `http://cgit.freedesktop.org/xorg/font/ibm-type1/`
3) Download the compressed file `font-ibm-type1-1.0.3.tar.gz`or `font-ibm-type1-1.0.3.zip`. The compressed file contains required fonts.
4) Extract the downloaded zip file to the `/usr/share/fonts` directory.

Configuring user accounts for multi-threaded file conversions

By default, PDF Generator can convert only one OpenOffice, Microsoft Word, or PowerPoint document at a time. If you enable multi-threaded conversions, PDF Generator can convert more than one of the documents concurrently by launching multiple instances of OpenOffice or PDFMaker (which is used to perform the Word and PowerPoint conversions).

If you need to enable multi-threaded file conversion, you must first perform the tasks outlined in the “Enabling multi-threaded file conversions” section of the Preparing to Install or Upgrade guide available on the AEM Forms on JEE documentation.

For non-Windows operating systems users, you must create users and configure the system to remove the password prompts. The following section outlines the method to create a user and perform additional configurations.

Add user account

1) In administration console, click **Services** > **PDF Generator**> **User Accounts.**
2) Click **Add** and enter the user name and password of a user who has administrative privileges on the AEM Forms on JEE Server. If you are configuring users for OpenOffice, dismiss the initial OpenOffice activation dialogs.

   NOTE: If you are configuring users for OpenOffice, the number of instances of OpenOffice cannot be greater than number of user accounts specified in this step.
3) Restart the AEM Forms on JEE Server.

Manual use of Acrobat restricted

If you installed the PDF Generator for native document conversion, use of the bundled Acrobat installation is restricted to the Generate PDF service and is not licensed for any other use.

8.5. Additional requirements for Connector for Documentum

If AEM Forms on JEE is connecting to Documentum, you must install Document Foundation Classes on machine hosting AEM Forms on JEE.

8.6. Additional requirements for Connector for IBM Content Manager

NOTE: For upgrade, these configurations are only required if you do not have Connector for IBM® Content Manager installed on your existing installation but will license it on AEM Forms on JEE or if you are performing an out-of-place upgrade on a new operating system.

Connector for IBM Content Manager requires the following software installed (both available from the IBM website):

- DB2 Universal Database Client
- IBM Information Integrator for Content (II4C)

See “Post-Deployment Activities” chapter in the Upgrading AEM Forms on JEE document for your application server.

Configure the connection for a single IBM Content Manager datastore

1) Start the DB2 Configuration Assistant.
2) Click **Selected**>**Add Database Using Wizard**.
3) Select **Manually Configure a Connection to a Database** and click **Next**.
4) Select **TCP/IP** and click **Next**.
5) Specify the following TCP/IP communication options and then click **Next**:

- In the **Host Name** box, type the host name of the server hosting DB2 Content Manager.
- Leave the Service Name box empty.
- In the **Port Number** box, type the port number. The default DB2 Content Manager port number is 50000.

6) In the **Database Name** box, type the IBM Content Manager datastore name and, in the **Database Alias** box, type the alias name for the datastore and then click **Next**.
7) Click **Next** to accept the default data source settings.
8) In the **Operating System** list, select the operating system you are using and then click **Next**.
9) Specify the following system options and then click **Next**:
   - In the **System Name** box, type the server name hosting DB2. If you click Discover, DB2 Content Manager searches for the system name you specified and, if the system is not found, all of the DB2 instances are listed.
   - In the **Host Name** box, type the name of the host, or click View Details to show the domain and IP address of the system you named in the previous step.
   - In the **Operating System** list, select the operating system on which you deployed DB2 Content Manager.
10) (Optional) To specify Security options, select **Use Authentication Value in Server's DBM Configuration** and click **Finish**.
11) In the Test Connection dialog box, test the connection as required.

Configure connections for multiple IBM Content Manager datastores

1) Configure the initial connection by following the steps in ToconfiguretheconnectionforasingleIBM-ContentManagerdatastore:.
2) Add additional database connections by modifying the cmbicmsrvs.ini file (the file that stores the datastore information) as follows:
   - From a command prompt window, change the directory to *[II4C home]*/bin (for example, C:\Program Files\db2cmv8\ on Windows **or** /opt/IBM/db2cmv8 on non-Windows operating systems).
   - Run the cmbenv81.bat (Windows) or cmbenv81.sh (non-Windows operating systems) file to set the environment and the classpath for the Java Utilities of II4C.
   - Change the directory to *[II4C working directory]*/cmgmt/connectors where *[II4C working directory]* is one of the following paths:

     (Windows) C:/Program Files/db2cmv8

     (Linux) /home/ibmcmadm
   - Run the command

     ```
     java com.ibm.mm.sdk.util.cmbsrvsicm -a add -s <library server database name> -sm <database schema name>
     ```

     where `<library server database name>` *is the same as* `Database Alias` *configured in step 6 above.*

NOTE: The following procedure allows users without DB2 rights to share the connection credentials through the cmbicmenv.ini file.

Configure a multiuser connection to the IBM Content Manager datastore

1) From a command prompt window, change the directory to *[II4C home]*/bin (for example, C:\Program Files\db2cmv8\ on Windows **or** /opt/IBM/db2cmv8 on non-Windows operating systems).
2) Run the cmbenv81.bat (Windows) or cmbenv81.sh (non-Windows operating systems) file to set the environment and the classpath for the Java Utilities of II4C.
3) Change the directory to *[II4C working directory]*/cmgmt/connectors, where *[II4C working directory]* is one of the following paths:

   (Windows) C:/Program Files/db2cmv8

   (Linux) /home/ibmcmadm
4) Run the command

   ```
   java com.ibm.mm.sdk.util.cmbenvicm -a add -s <library server database name> -u <database user ID> -p <database password>
   ```

   where `<library server database name>` *is the same as* `Database alias` *configured in step 6 above.*

8.7. Additional requirements for Connector for IBM FileNet

These requirements are optional and required only if you are installing Connector for IBM® FileNet.

NOTE: For upgrade, these configurations are only required if you do not have Connector for IBM FileNet installed on your existing installation but will license it on AEM 6.4 Forms or if you are performing an out-of-place upgrade on a new operating system.

IBM FileNet 5.2

If AEM Forms on JEE is connecting to IBM FileNet 5.2 Content Engine, you must install the Content Engine Java Client. Use the IBM FileNet 5.2 content engine client installer located by default in C:\Program Files\FileNet\CEClient. During installation, select at least one of the components from Application Engine or Process Engine on the component selection screen.

For IBM FileNet 5.2 Process Engine, you must install the IBM FileNet 5.2 Process Engine Client located by default in C:\Program Files\FileNet\BPMClient. During installation, select the Other option on the component selection screen.

8.8. AEM Forms on JEE IPv6 support

AEM Forms on JEE includes IPv6 support. The default configurations defined in the installation documentation for AEM Forms on JEE set IPv4 as the default IP protocol because this protocol has the most compatibility with third-party infrastructure.

Do not enable IPv6 unless your deployment must use it. The number of supported platform configurations is reduced when enabling IPv6 support with AEM Forms on JEE. You should verify that all third-party software, hardware, and networks that you plan to use have IPv6 support before you attempt to enable IPv6.

NOTE: If you are enabling CIFS in an IPv6 environment, you must explicitly enable IPv6 configuration after you configure your AEM Forms on JEE installation using Configuration Manager. See “Enabling CIFS in IPv6 mode” in the guide for your application server.

Supported IPv6 configurations

Not all infrastructure components support IPv6. For example, Oracle database does not support IPv6. You can use these databases by configuring the connection between the application server and the databases with IPv4, and the remaining communications over IPv6.

Check with your component vendor if IPv6 is supported.

IPv6 implementation guidelines

When you use IPv6 implementation either partially or fully, keep the following points in mind:

- After installing AEM Forms on JEE, do not use the option to start the Configuration Manager directly from the AEM Forms on JEE installer. Instead, navigate to the *[aem-forms root]*\configurationManager\bin\IPv6 directory, and run the IPv6-specific script (`ConfigurationManager_IPv6.bat` or `ConfigurationManager_IPv6.sh`) to launch the Configuration Manager.
- If you have chosen to validate the application server configuration using the Configuration Manager, the validation will fail after you enable IPv6 for the application server. You can ignore this error message during the process. After you restart the application server in the IPv6 mode, the application server can connect to the database.
- To have a pure IPv6 communication with the database server, modify EDC_DS, AEM_DS, and IDP_DS connection settings to use the hostname of the database which resolves to a numeric IPv6 address.
- Many software components such as database drivers do not completely support numeric IPv6 addresses. So, it is recommended that you use a DNS-resolved hostname instead of numeric IPv6 addresses.
- Ensure that name used for mapping IPv6 is added to the CSRF filter section. If the name is not added, see Preventing CSRF attacks section in administration help.

  NOTE: *Name used for mapping IPv6 must not contain square brackets ([]).*

- In an IPv6 environment, if you are using Microsoft SQL Server, you should specify the database server IP address in the following format. Note that in this string, *;serverName* is a keyword, and so must not be replaced with the actual server name.

  ```
  jdbc:sqlserver://;serverName=<IPv6 address>;
  portNumber=<port>;databaseName=<db_name>
  ```

  Here, instead of the numeric IPv6 address, you can specify the hostname of the SQL Server database.

Configuring IPv6 for WebSphere

1) Install AEM Forms on JEE using the installer script. After the installation is complete, do not start the Configuration Manager when the installer prompts.
2) Navigate to the *[aem-forms root]*\configurationManager\bin\IPv6 directory, and run the IPv6-specific script (`ConfigurationManager_IPv6.bat` or `ConfigurationManager_IPv6.sh`) to launch LCM.
3) Use the Configuration Manager options to configure EAR and the application server.
4) Follow the steps in the Configuration Manager to configure the application server. While configuring database, provide hostname of database that is mapped to IPv6 address.
5) Validate the application server configuration by Configuration Manager. Ignore the warning if data source validation fails. You can validate data sources from WebSphere Administrative Console.
6) On the WebSphere Administrative Console, select **Servers > Server Types > WebSphere application servers > *[server name]* > Java and forms workflow > Process definition > Java Virtual Machine**. In **Generic JVM arguments**, add the `-Djava.net.preferIPv6Addresses=true`argument.
7) Select **Servers > Server Types > WebSphere application servers > *[server name]* > Java and forms workflow > Process definition > Java Virtual Machine**, and click **Custom Properties**. Change `java.net.preferIPv4Stack=true` to`java.net.preferIPv6Stack=true`.
8) Manually deploy the EAR files to WebSphere Application Server by using WebSphere Administrative Console. Configured EAR files are available at *[aem-forms root]*/configurationManager/export folder.
9) Restart WebSphere Application Server.
10) Navigate to the *[aem-forms root]*\configurationManager\bin\IPv6 directory, and run ConfigurationManager_IPv6.bat or ConfigurationManager_IPv6.sh to launch Configuration Manager.
11) In the Configuration Manager, select the options to bootstrap and deploy AEM Forms on JEE modules. Provide the application server hostname that is mapped to IPv6 address.

NOTE: After you start the application server in an IPv6 environment, (with the flag `-Djava.net.preferIPv6Stack=true`), you can access it only through its IPv6 address or hostname mapped to IPv6 address.

9. Appendix - Install using the Command Line Interface

9.1. Overview

AEM Forms on JEE provides a command line interface (CLI) for the installation program. The CLI is intended to be used by advanced users of AEM Forms on JEE or in server environments which do not support the use of the Graphical User Interface (GUI) of the installation program. The CLI runs in console mode with one interactive session for all install operations.

After you start the installation process, follow the on-screen instructions to choose your installation options. Respond to each prompt to proceed to the next step in the installation.

NOTE: If you want to change a choice that you made on a previous step, type `back`. You can cancel the installation at any time by typing `quit`.

9.2. Install AEM Forms on JEE

1) Open a command prompt and navigate to the folder in the installation media or your hard disk that contains the installer executable:
   - (Windows) server\Disk1\InstData\Windows_64\NoVM
   - (Linux) server/Disk1/InstData/Linux/NoVM
2) Open a command prompt and run the following command:
   - (Windows) `install.exe -i console`
   - (Non-Windows) `./install.bin -i console`

     NOTE: Entering the command without the `-i console` option launches the GUI-based installer.
3) Respond to the prompts as described in the following table:

Prompt	Description
Choose Locale	Select the locale for the installation to use by entering a value between 1 and 3. You can select the default value by pressing **Enter**. The options are Deutsch, English, and Français. English is the default locale.

Prompt	Description
Upgrade Installation	Select the Install Adobe Experience Manager Forms installation option and press **Enter**. Do not select the option to upgrade.
Choose Install Folder	On the Destination screen, press **Enter** to accept the default directory or type the new installation directory location. Do not use accented characters in the directory name. Otherwise, the CLI will ignore the accents and create a directory after modifying the accented characters.
AEM forms on JEE Server License Agreement	Press **Enter** to read through the pages of the license agreement. If you agree to the agreement, type `Y` and press **Enter**.
Pre-Installation Summary	Press **Enter** to continue installation with the choices you have made. Type `back` to go back to previous steps and change any of the settings.
Ready To Install	Press **Enter** to start the installation process.
Installing	During the installation process, the progress bar advances to indicate the progress of installation.
Configuration Manager	Press **Enter** to complete the installation of AEM Forms on JEE. You can run the Configuration Manager in GUI mode by invoking the following script: (Windows): C:\Adobe\Adobe_Experience_Manager_Forms\configurationManager\bin\ConfigurationManager.bat (Non-Windows): `/opt/adobe/Adobe_Experience_Manager_Forms/configurationManager/bin/ConfigurationManager.sh`
Installation Complete	Press **Enter** to exit the installer.

9.3. Error logs

If an error occurs, you can review the install.log in the log directory of your installation:

- (Windows) *[aem-forms root]*\log
- (non-Windows) *[aem-forms root]*/log

10. Appendix - Configuration Manager Command Line Interface

The CLI is intended to be used in server environments that do not support the use of the Graphical User Interface (GUI) of the Configuration Manager.

10.1. Order of operations

The Configuration Manager CLI must follow the same order of operations as the GUI version of the Configuration Manager. Ensure that you use the CLI operations in this order:

1) Configure AEM Forms on JEE.
2) Configure CRX.
3) Update AEM Forms on JEE core settings.
4) Migrate existing turnkey database. (Upgrade Turnkey only)
5) Validate application server topology.
6) Validate database connectivity.
7) Configure the application server.
8) Validate application server configurations.
9) Deploy AEM Forms on JEE.
10) Initialize AEM forms on JEE.
11) Validate AEM Forms on JEE.
12) Deploy the AEM Forms on JEE modules.
13) Validate the AEM Forms on JEE module deployment.
14) Upgrade the crx-repository.
15) Migrate Data Essential to AEM Forms on JEE
16) Post-deployment configurations.
17) Check system readiness for PDF Generator.
18) Add administrator user for PDF Generator.
19) Configure Connector for IBM Content Manager.
20) Configure Connector for IBM FileNet.
21) Configure Connector for EMC Documentum.
22) Configure Connector for SharePoint.

IMPORTANT: You must restart each of your cluster nodes after you complete Configuration Manager CLI operations.

IMPORTANT: You must restart your application server after you complete Configuration Manager CLI operations.

10.2. Command Line Interface property file

The Configuration Manager CLI requires two property files containing the defined properties for your AEM Forms on JEE environment. The templates for the properties files, cli_propertyFile_template.txt and cli_propertyFile_upgrade_template.txt, are located in the *[aem-forms root]*/configurationManager/bin folder.

- cli_propertyFile_template.txt file contains properties that apply to AEM Forms on JEE installation and configuration scenarios, in general.
- cli_propertyFile_upgrade_template.txt file contains properties specific to upgrading tasks. Both are required for upgrading from a previous version of AEM Forms on JEE.

Create copies of these files and edit the values.You should create the property file according to your installation. Use one of the following methods.

- Copy the property files cli_propertyFile_template.txt and cli_propertyFile_upgrade_template.txt to use these as a template and edit the values based on the Configuration Manager operations you intend to use.
- Use the GUI of the Configuration Manager and then use the property file created by the GUI version as the CLI version property file. When you run the *[aem-forms root]*/configurationManager/bin/ConfigurationManager.bat/sh file, the userValuesForCLI.properties file is created in the *[aem-forms root]*/configurationManager/config directory. You can use this file as input for the Configuration Manager CLI.

  NOTE: The file does not contain the properties listed below, which are optional. If required, you can manually add these properties to the file:

  – `ApplicationServerRestartRequired`
  – `lcGdsLocation`
  – `lcPrevGdsLocation`

  NOTE: In the CLI properties file, you must use the escape character (\) for Windows paths directory separator (\). For example, if the Fonts folder to be mentioned is C:\Windows\Fonts, in the Configuration Manager CLI script, you should enter it as `C:\\Windows\\Fonts`.

  NOTE: The following modules depend on ALC-LFS-ContentRepository. If you are using the cli_propertyFile_template.txt as template then either remove the ALC-LFS-ContentRepository from excludedSolutionComponents list or add the following LFS in excludedSolutionComponents list:

  – *ALC-LFS-ProcessManagement*
  – *ALC-LFS-CorrespondenceManagement*
  – *ALC-LFS-ContentRepository*
  – *ALC-LFS-MobileForms*
  – ALC-LFS_FormsManager

10.3. Upgrading AEM Forms on JEE Commands

Update AEM Forms on JEE core settings command

The `upgrade-configureCoreSettings` command updates various core settings for AEM Forms on JEE. For example, if in your previous LiveCycle system you had the Global Document Storage (GDS) directory set at *`C:\LC\GDS`* and in AEM Forms on JEE you plan to set it to *`E:\DS\GDS`*, then the new location is not updated in the database unless this CLI command is executed. Other core settings that can be updated in the same manner are: Adobe server fonts directory, Customer fonts directory, System fonts directory, Enable FIPS, AEM Forms on JEE temp directory, AEM Forms on JEE global document storage directory.The following properties are available for the `upgrade-configureCoreSettings` command.

Property	Description	Required	Can be empty
prevLCVersion	The version of AEM Forms on JEE from which upgrade is being performed. Valid values are 6.2 or 6.3 **NOTE:** Specify value 6.2 to upgrade from LiveCycle to AEM 6.4 Forms.	Yes	No
excludedSolutionComponents	Comma separated list of modules not being upgraded/installed. This is equivalent to deselecting installed/licensed solution components in the Configuration Manager GUI.	No	Yes

(Turnkey Only) Migrate existing turnkey database command

The `upgrade-migrateTurnkeyDatabase` command is used to migrate data from 'adobe' schema of a previous LiveCycle Turnkey MySQL installation to 'adobe' schema of AEM Forms on JEE Turnkey MySQL installation. Before you run this command, make sure that both the MySQL services are running and are accessible. Also, both the MySQL services should be running on different ports.The following properties are available for the `upgrade-migrateTurnkeyDatabase`command.

NOTE: *This command would run only if your AEM Forms on JEE Turnkey installation and your previous Turnkey installation coexist on the same machine and you'd chosen to perform an upgrade installation while installing AEM Forms on JEE Turnkey.*

Property	Description	Required	Can be empty
lcDatabaseHostName	Hostname for AEM Forms on JEE turnkey database.	Yes	No
lcDatabaseName	Database name for AEM Forms on JEE turnkey database. Default is adobe.	Yes	No
lcDatabaseUserName	Username for accessing AEM Forms on JEE turnkey database.	Yes	No
lcDatabaseUserPassword	Password for accessing AEM Forms on JEE turnkey database. If you don't provide a password in the file, you will prompted to provide it on command line	No	Yes
lcDatabaseDriverFile	Path to driver file for AEM Forms on JEE turnkey database.	Yes	No
lcDatabasePortNumber	Port used by AEM Forms on JEE turnkey database.	Yes	No
lcDatabaseType	Type of database configured for AEM Forms on JEE turnkey database. Default is mysql.	Yes	No
lcPrevDatabaseHostName	Hostname for previous AEM Forms on JEE turnkey database.	Yes	No
lcPrevDatabaseName	Database name for previous AEM Forms on JEE turnkey database. Default is adobe.	Yes	No

Property	Description	Required	Can be empty
lcPrevDatabaseUserName	Username for accessing previous AEM Forms on JEE turnkey database.	Yes	No
lcPrevDatabaseUserPassword	Password for accessing previous AEM Forms on JEE turnkey database. If you don't provide a password in the file, you will prompted to provide it on command line	No	Yes
lcPrevDatabaseDriverFile	Path to driver file for previous AEM Forms on JEE turnkey database.	Yes	No
lcPrevDatabasePortNumber	The port used by previous AEM Forms on JEE turnkey database.	Yes	No
lcPrevDatabaseType	Type of database configured for previous AEM Forms on JEE turnkey database. Default is mysql.	Yes	No

Post-deployment Configuration command

The `upgrade-configurePostDeploy` command does the actual upgrade of the system and is run after AEM Forms on JEE EAR files and modules have been deployed.

The following properties are available for the `upgrade-configurePostDeploy` command:

Property	Description	Required	Can be empty
prevLCVersion	The version of AEM Forms on JEE from which upgrade is being performed. Valid values are 6.2 or 6.3 **NOTE:** Specify value 6.2 to upgrade from LiveCycle to AEM 6.4 Forms.	Yes	No

excludedSolutionComponents	Comma separated list of AEM Forms on JEE components not being installed. This is equivalent to deselecting installed/licensed solution components in the GUI.	No	Yes

AEM forms on JEE Host and Authorization information

Property	Description	Required	Can be empty
LCHost	Hostname of the AEM Forms on JEE Server.	Yes	No
LCPort	Port number on which AEM Forms on JEE application server is configured.	Yes	No
localServer.appServerRootDir	This is used to access appserver client JAR files. (Local application server root directory required for WebLogic and WebSphere only)	Yes	Yes
LCAdminUserID	Username of AEM Forms on JEE administrator user	Yes	No
LCAdminPassword	Password for administrator user. If you don't provide a password in the file, you will prompted to provide it on command line	No	Yes

AEM forms on JEE Database information

Property	Description	Required	Can be empty
lcDatabaseType	Type of database configured for AEM Forms on JEE. Values can be `mysql`, `db2`, `oracle`, or `sqlserver`	Yes	No
lcDatabaseHostName	Hostname for the AEM Forms on JEE database.	Yes	No

lcDatabasePortNumber	The port number for the AEM Forms on JEE database.	Yes	No
lcDatabaseDriverFile	Path to driver file for the AEM Forms on JEE database.	Yes	No
lcDatabaseUserName	Username for accessing the AEM Forms on JEE database.	Yes	No
lcDatabaseName	AEM forms on JEE database name. Default is `adobe`.	Yes	No
lcDatabaseUserPassword	Password for accessing database. If you don't provide a password in the file, you will prompted to provide it on command line	No	Yes

10.4. General configuration properties

Common properties

Common properties are:

WebLogic and WebSphere specific properties: Required for the Configure Application Server, Deploy AEM Forms on JEE, Validate Application Server Topology and Validate Application Server Configurations operations.

AEM Forms on JEE Server specific properties: Required for the Initialize AEM Forms on JEE and Deploy AEM Forms on JEE Components operations.

These properties are required for the following operations:

- Initialize AEM Forms on JEE
- Deploy AEM Forms on JEE components.

Property	Values	Description
targetServer.topologyType	server or cluster	The type of application server topology for which you are deploying AEM forms on JEE.
targetServer.name	String	The name assigned to the application server/admin server node or cluster.

Property	Values	Description
targetServer.adminHost	String Default is *localhost*	The hostname of the server where the application server is installed.
targetServer.adminPort	Integer	The port number the admin server uses to listen for SOAP requests.
targetServer.adminUserID	String	The administrative user ID to use when accessing the application server.
localServer.appServerRootDir	Default: (Windows) C:\Program Files\IBM\ WebSphere\AppServer (Linux) /opt/IBM/WebSphere/AppServer (AIX) /usr/IBM/WebSphere/AppServer	The root directory of the application server instance that you are configuring locally (on which you plan to deploy AEM Forms on JEE or that you will use to communicate with a remote server on which you plan to deploy AEM Forms on JEE).
AEM Forms on JEE Server specific properties		
LCHost	String	The hostname of the server where AEM Forms on JEE will be deployed. For cluster deployments, hostname of any one of the cluster nodes where the application server is running.
LCPort	Integer	The web port number where AEM Forms on JEE will be deployed.

Property	Values	Description
excludedSolutionComponents	String. Values include: ALC-LFS-Forms, ALC-LFS-ConnectorEMCDocumentum, ALC-LFS-ConnectorIBMFileNet, ALC-LFS-ConnectorIBMContentManager, ALC-LFS-DigitalSignatures, ALC-LFS-DataCapture, ALC-LFS-Output, ALC-LFS-PDFGenerator, ALC-LFS-ProcessManagement, ALC-LFS-ReaderExtensions, ALC-LFS-RightsManagement ALC-LFS-CorrespondenceManagement, ALC-LFS-ContentRepository, ALC-LFS-MobileForms, ALC-LFS_FormsManager	(Optional) List the AEM Forms on JEE modules you do not want to configure. Specify the excluded modules in a comma separated list.
CRX Content repository The following properties are specified in the `cli_propertyFile_crx_template.txt`file.	true: false:	
contentRepository.rootDir		Path of the CRX repository.
is.new.installation.of.crx.repository	true: to create a new repository false: to upgrade an existing repository	If the content repository did not exist before upgrade and you have installed the Content Repository for the very first time then set the value to true.
use.crx3.mongo	true: false:	If you have performed a fresh installation, to use Mongo DB with CRX3 set value to true. If the value is false CRX3 TAR is configured.
mongo.db.uri	<URI of Mongo DB>	If you are using Mongo DB, set URI of Mongo DB
mongo.db.name	<name of Mongo DB>	If you are using Mongo DB, provide name of Mongo DB instance

Property	Values	Description
use.crx3.rdb.mk	true: false:	When the value of this property is true, the CRX repository is configured with RDB MK. The default value is false where the repository is configured as CRX3 TAR.

Configure AEM Forms on JEE properties

These properties only apply to the configure AEM Forms on JEE operation.

Property	Values	Description
AdobeFontsDir	String	Location of the Adobe server fonts directory. This path must be accessible from the server being deployed to. This path must be accessible from all cluster nodes being deployed to.
customerFontsDir	String	Location of the customer fonts directory. This path must be accessible from the server being deployed to. This path must be accessible from all cluster nodes being deployed to.
systemFontsDir	String	Location of the system fonts directory. This path must be accessible from the server being deployed to. This path must be accessible from all cluster nodes being deployed to.

Property	Values	Description
LCTempDir	String	Location of the temporary directory. This path must be accessible from the server being deployed to. This path must be accessible from all cluster nodes being deployed to.
LCGlobalDocStorageDir	String	The global document storage root directory. Specify a path to an NFS shared directory used to store long-lived documents and to share them among all cluster nodes. This path must be accessible from the server being deployed to. This path must be accessible from all cluster nodes being deployed to.
EnableDocumentDBStorage	true or false Default: false	Enables or disables document storage in database for persistent documents. Even if you enable document storage in database, you will need the file system directory for GDS.

Configure or validate application server properties

Configure or Validate WebSphere properties

The Configuration Manager can configure or validate your WebSphere application server as required by AEM Forms on JEE.

These properties apply to the following operations:

- Configure Application Server
- Validate Application Server Topology
- Validate Application Server Configurations

- Validate Database Connectivity

Application server properties

Property	Values	Description
You must configure the application server-specific properties section. For more information see Commonproperties		
jvm.initialHeapSize	Default: 256	The initial heap size, in MB, for the JVM.
jvm.maxHeapSize	Default: 4096	The maximum heap size, in MB, for the JVM.
WebLogic and WebSphere Cluster only		
cache.useUDP	true	Set the value to `true` if AEM Forms on JEE uses UDP to implement caching. Set to `false` if AEM Forms on JEE uses TCP to implement caching.
cache.udp.port	Default: 33456	The port number that the primary computer uses for UDP-based caching communication. Configure only if cache.useUDP=true.
cache.tcpip.primaryhost	String	The host name of the computer where the primary application server is installed. Configure only if cache.useUDP!=true.
cache.tcpip.primaryport	Default: 22345	The port number that the primary application server computer uses for TCP-based caching communication. Configure only if cache.useUDP!=true.

Property	Values	Description
cache.tcpip.secondaryhost	String	The host name of the computer where the secondary application server is installed. Configure only if cache.useUDP!=true.
cache.tcpip.secondaryport	Default: 22345	The port number that the secondary application server computer uses for TCP-based caching communication. Configure only if cache.useUDP!=true.
Datasource configuration		
datasource.dbType	Choose: • oracle *db2* *sqlserver*	The type of database configured to use with AEM Forms on JEE.
datasource.dbName	String	The name of the database.
datasource.dbHost	String	The host name or IP address of the server where the database is located.
datasource.dbPort	Integer	The database port AEM Forms on JEE will use when communicating with the database.
datasource.dbUser	String	The user ID AEM Forms on JEE will use when accessing the database.
datasource.dbPassword	String	The password associated with the database user ID.
datasource.target.driverPath	String	JDBC driver in the application server lib directory. This path must be valid and accessible from the server being configured. This path must be valid and accessible from all cluster nodes being configured.

Property	Values	Description
datasource.local.driverPath	String	Local JDBC driver. This value is used for testing direct database connection.

Deploy AEM Forms on JEE properties

These Deploy AEM Forms on JEE properties only apply to the deploy AEM Forms on JEE operation.

Property	Values	Description
For more information, see Common properties.		
deployment.includeIVS	false	Specifies whether IVS EAR files are included in the deployment. It is recommended not to include IVS EAR files in a production environment.
targetServer.virtualHost	String	Virtual host of your WebSphere application server. The default values are admin_host, default_host, proxy_host.

Initialize AEM Forms on JEE properties

These initialize AEM Forms on JEE properties only apply to the initialize AEM Forms on JEE operation.

Property	Values	Description
For more information, see Common properties.		

Deploy AEM Forms on JEE Components properties

These properties apply to the following operations:

- Deploy AEM Forms on JEE Components
- Validate AEM Forms on JEE Component Deployment
- Validate AEM Forms on JEE Server.

Property	Values	Description
You must configure the AEM Forms on JEE Server Information section. For more information, see Common properties		

Property	Values	Description
LCAdminUserID	String	The user ID to assign to the AEM Forms on JEE Administrator user. This User ID is used to login to the Administrator Console.
LCAdminPassword	String	The password to assign to the AEM Forms on JEE Administrator user. This password is used to login to the Administrator Console.

Add administrator user for PDF Generator

These properties apply only to the adding administrator user for PDF Generator operation. These properties are present in cli_propertyFile_pdfg_template.txt

Property	Values	Description
LCHost	String	Hostname where AEM Forms on JEE Server is installed.
LCPort	Integer	Port number where AEM Forms on JEE application server is configured
LCAdminUserID	String	The user ID to assign to the AEM Forms on JEE Administrator user. This User ID is used to login to the Administrator Console.
LCAdminPassword	String	The password to assign to the AEM Forms on JEE Administrator user. This password is used to login to the Administrator Console.
LCServerMachineAdminUser	String	The user ID of the Administrator user of the Operation System hosting AEM forms on JEE
LCServerMachineAdminUserPasswd	String	The password of the Administrator user of the Operation System hosting AEM forms on JEE

Configure Connector for IBM Content Manager

NOTE: The following properties are specified in the cli_propertyFile_ecm_ibmcm_template.txt file.

Property	Values	Description
LCHost	String	Hostname where AEM Forms on JEE Server is installed.
LCPort	Integer	Port number where AEM Forms on JEE application server is configured
LCAdminUserID	String	The user ID to assign to the AEM Forms on JEE Administrator user. This User ID is used to login to the Administrator Console.
LCAdminPassword	String	The password to assign to the AEM Forms on JEE Administrator user. This password is used to login to the Administrator Console.
CDVTopology.appserverrootdir	String	The root directory of the application server instance that you are configuring on a remote server (on which you plan to deploy AEM Forms on JEE)
ConfigureIBMCM	true or false	Specify true to configure Connector for IBM Content Manager
IBMCMClientPathDirectory	String	Location of IBM Content Manager client installation directory.
DataStoreName	String	Name of the DataStore of IBM Content Manager Server that you want to connect to
IBMCMUsername	String	The user name assign to the IBM Content Manager Administrator user. This User ID is used to login to the IBM Content Manager.

Property	Values	Description
IBMCMPassword	String	The password to assign to the IBM Content Manager Administrator user. This password is used to login to the IBM Content Manager.
ConnectionString	String	Additional arguments used in the connection string to connect to IBM Content Manager(Optional).

Configure Connector for IBM FileNet

NOTE: The following properties are specified in the cli_propertyFile_ecm_filenet_template.txt file.

Property	Values	Description
LCHost	String	Host name of the machine where AEM Forms on JEE Server is installed.
LCPort	Integer	Port number where AEM Forms on JEE application server is configured
LCAdminUserID	String	The user ID to assign to the AEM Forms on JEE Administrator user. This User ID is used to login to the Administrator Console.
LCAdminPassword	String	The password to assign to the AEM Forms on JEE Administrator user. This password is used to login to the Administrator Console.
CDVTopology.appserverrootdir	String	The root directory of the application server instance that you are configuring on a remote server (on which you plan to deploy AEM Forms on JEE)
ConfigureFilenetCE	true or false	Specify true to configure Connector for IBM Filenet

Property	Values	Description
FilenetConfigureCEVersion	String	The FileNet client version to configure. Specify FilenetClientVersion5.0 or FilenetClientVersion5.2
FilenetCEClientPathDirectory	String	Location of IBM Filenet Content Manager client installation directory.
ContentEngineName	String	Host name or IP address of the machine where IBM Filenet Content Engine is installed
ContentEnginePort	String	The port number used by IBM Filenet Content Engine
CredentialProtectionSchema	CLEAR or SYMMETRIC	Specify the level of protection.
EncryptionFileLocation	String	Location of the encryption file. This is required only when you select SYMMETRIC option for CredentialProtectionSchema attribute. Use a forward slash (/) or double backward slashes (\\) as a path seperator.
DefaultObjectStore	String	Name of the ObjectStore for the Connector for IBM Filenet Content Server.
FilenetContentEngineUsernam e	String	The user ID to connect to the IBM FileNet Content server. The user ID with read-access privileges would be allowed to connect to the Default object Store.
FilenetContentEnginePasswor d	String	The password to assigned to the IBM FileNet user. This password is used to connect to Default object Store.
ConfigureFilenetPE	true or false	Specify true to configure Connector for IBM FileNet
FilenetPEClientPathDirectory	String	Location of IBM FIleNet client installation directory

Property	Values	Description
FilenetProcessEngineHostname	String	Host name or IP address of the process router.
FilenetProcessEnginePortNumber	Integer	Port number for IBM FileNet Content Server
FilenetPERouterURLConnectionPoint	String	Name of the process router.
FilenetProcessEngineUsername	String	The user ID to connect to the IBM FileNet Content Server
FilenetProcessEnginePassword	String	The password to connect to the IBM FileNet Content Server

Configure Connector for EMC Documentum

NOTE: The following properties are specified in the cli_propertyFile_ecm_documentum_template.txt file.

Property	Values	Description
LCHost	String	Host name where AEM Forms on JEE Server is installed.
LCPort	Integer	Port number where AEM Forms on JEE application server is configured
LCAdminUserID	String	The user ID to assign to the AEM Forms on JEE Administrator user. This User ID is used to login to the Administrator Console.
LCAdminPassword	String	The password to assign to the AEM Forms on JEE Administrator user. This password is used to login to the Administrator Console.
CDVTopology.appserverrootdir	String	The root directory of the application server instance that you are configuring on a remote server (on which you plan to deploy AEM Forms on JEE)

Property	Values	Description
ConfigureDocumentum	true or false	Specify true to configure Connector for EMC Documentum
DocumentumClientVersion	String	The EMC Documentum client version to configure. Specify DocumentumClientVersion
DocumentumClientPathDirectory	String	Location of EMC Documentum client installation directory
ConnectionBrokerHostName	String	Host name or IP address of the EMC Documentum Content Server.
ConnectionBrokerPortNumber	String	Port number for EMC Documentum Content Server
DocumentumUsername	String	The user ID to connect to the EMC Documentum Content Server.
DocumentumPassword	String	The password ID to connect to the EMC Documentum Content Server.
DocumentumDefaultRepositoryName	String	Name of the default repository of MC Documentum Content Server

Configure Connector for Microsoft SharePoint

NOTE: The following properties are specified in the cli_propertyFile_ecm_sharepoint_template.txt file.

Property	Values	Description
LCHost	String	Host name where AEM Forms on JEE Server is installed.
LCPort	Integer	Port number where AEM Forms on JEE application server is configured
LCAdminUserID	String	The user ID to assign to the AEM Forms on JEE Administrator user. This User ID is used to login to the Administrator Console.

Property	Values	Description
LCAdminPassword	String	The password to assign to the AEM Forms on JEE Administrator user. This password is used to login to the Administrator Console.
CDVTopology.appserverrootdir	String	The root directory of the application server instance that you are configuring on a remote server (on which you plan to deploy AEM Forms on JEE)
ConfigureSharePoint	true or false	Specify true to configure Connector for Microsoft SharePoint
SharePointServerAddress	String	Host name or IP address of the Sharepoint Server
SharePointUsername	String	The user ID to connect to the Sharepoint Server
SharePointPassword	String	The password to connect to the Sharepoint Server
SharePointDomain	String	The Domain Name of the Sharepoint Server
ConnectionString	String	Additional arguments used in the connection string to connect to the Sharepoint Server(optional

Command Line Interface Usage

Once you have configured your property file, you must navigate to the *[AEM Forms on JEE root]*/configurationManager/bin folder.

To view a complete description of the Configuration Manager CLI commands, type: `ConfigurationManagerCLI help <command name>`.

Configure AEM Forms on JEE CLI Usage

The Configure AEM Forms on JEE operation requires the following syntax:

configureLiveCycle -f *<propertyFile>*

Where:

- -f <*propertyFile*>*:* A property file containing the required arguments. For more information on creating a property file, see *Command Line Interface property file*.

Configure CRX CLI Usage

The Configure CRX Repository requires the following syntax:

configureCRXRepository -f <*propertyFile*>

Validate Application Server Topology CLI Usage

The Validate Application Server Topology operation is optional and requires the following syntax:

validateApplicationServerTopology -f <*propertyFile*> -*targetServer_AdminPassword* <*password*>

Where:

- -targetServer_AdminPassword <password>: Allows you to set the Admin password on the command line. If this argument is present, it will override the targetServer.adminPassword property in the property file.

Validate database connectivity CLI Usage

The validate Database Connectivity operation is optional and requires the following syntax:

validateDBConnectivity -f <*propertyFile*> -*datasource_dbPasssword* <*password*>

Where:

- -datasource_dbPassword <password>: Allows you to set the database user password on the command line. If this argument is present, it will override the datasource.dbPassword property in the property file.

Configure the Application Server CLI Usage

The Configure Application Server operation requires the following syntax:

configureApplicationServer -*targetServer_AdminPassword* <*password*>-f <*propertyFile*> [-skip <*configurationsToSkipList*>]

Where:

- -targetServer_AdminPassword <password>: Allows you to set the Administrator password on the command line. If this argument is present, it will override the targetServer_AdminPassword property in the property file.
- -skip <*configurationsToSkipList*>: This is an optional parameter which allows you to list the application server components you do not want to configure. Specify the excluded components in a comma separated list. Valid options are Datasource or Core.

Validate Application Server Configurations CLI Usage

The Validate Application Server Configurations operation is optional and requires the following syntax:

validateApplicationServerConfigurations -f <*propertyFile*> -*targetServer_AdminPassword* <*password*>

Where:

- -targetServer_AdminPassword <password>: Allows you to set the Admin password on the command line. If this argument is present, it will override the targetServer.adminPassword property in the property file.

(WebSphere and Weblogic Only) Deploy AEM Forms on JEE CLI Usage

The Deploy AEM Forms on JEE operation requires the following syntax:

deployLiveCycle -f *<propertyFile>*

IMPORTANT: You must restart your application server after you complete Deploy AEM Forms on JEE operation.

Initialize AEM Forms on JEE CLI Usage

The initialize AEM Forms on JEE operation requires the following syntax:

initializeLiveCycle -f *<propertyFile>*

Validate AEM Forms on JEE Server CLI Usage

The Validate AEM Forms on JEE Server operation is optional and requires the following syntax:

validateLiveCycleServer -f *<propertyFile> -LCAdminPassword <password>*

Where:

- -LCAdminPassword <password>: Allows you to set the Admin password on the command line. If this argument is present, it will override the targetServer.adminPassword property in the property file.

Deploy AEM Forms on JEE Components CLI Usage

The Deploy AEM Forms on JEE Components operation requires the following syntax:

deployLiveCycleComponents -f *<propertyFile> -LCAdminPassword <password>*

Validate AEM Forms on JEE Component Deployment CLI Usage

The Validate AEM Forms on JEE Component Deployment operation is optional and requires the following syntax:

validateLiveCycleComponentDeployment -f *<propertyFile> -LCAdminPassword <password>*

Check system readiness for PDF Generator

The Checking system readiness for PDF Generator operation requires the following syntax:

pdfg-checkSystemReadiness

Adding administrator user for PDF Generator

The adding administrator user for PDF Generator operation requires the following syntax:

pdfg-addAdminUser -f *<propertyFile>*

Where:

- -f <*propertyFile*>: A property file containing the required arguments. For more information on creating a property file, see *Command Line Interface property file*.

Configure Connector for IBM Content Manager

The Configure Connector for IBM Content Manager operation is optional and requires the following syntax:

IBMCM-configurationCLI -f <propertyFile>

IMPORTANT: Modify the <propertyFile> called cli_propertyFile_ecm_ibmcm_template.txt located in the *[aem-forms root]*\configurationManager\bin\ directory.

Perform the following steps manually to complete the configuration for Connector for IBM Content Manager.

1) Copy the *adobe-component-ext.properties* file from *[aem-forms root]*/configurationManager/configure-ecm/websphere to the following [appserver root]/profiles/[profile_name] directory.
2) Restart the Application Server.
3) Start the following services from administration console
   - IBMCMAuthProviderService
   - IBMCMConnectorService

Configure Connector for IBM FileNet

The Configure Connector for IBM FileNet operation is optional and requires the following syntax:

filenet-configurationCLI -f <propertyFile>

IMPORTANT: Modify the <propertyFile> called cli_propertyFile_ecm_filenet_template.txt located in the *[aem-forms root]*\configurationManager\bin\ directory.

Perform the following steps manually to complete the configuration for Connector for IBM Content Manager.

1) Copy the *adobe-component-ext.properties* file from *[aem-forms root]*/configurationManager/configure-ecm/websphere to the following [appserver root]/profiles/[profile_name] directory.
2) Locate the wsjass.conf file in the [appserver root]/profiles/[profile name]/properties directory and add to it contents of wsjass.conf file available in [aem-forms root]/configurationManager/configure-ecm/websphere directory.
3) Restart the Application Server.
4) Start the following services from administration console
   - IBMFileNetAuthProviderService
   - IBMFileNetContentRepositoryConnector
   - IBMFileNetRepositoryProvider
   - IBMFileNetProcessEngineConnector(If configured)

Configure Connector for EMC Documentum

The Configure Connector for EMC Documentum operation is optional and requires the following syntax:

documentum-configurationCLI -f <propertyFile>

IMPORTANT: Modify the <propertyFile> called cli_propertyFile_ecm_documentum_template.txt located in the *[aem-forms root]*\configurationManager\bin\ directory.

Perform the following steps manually to complete the configuration for Connector for EMC Documentum.

1) Copy the *adobe-component-ext.properties* file from *[aem-forms root]*/configurationManager/configure-ecm/websphere to the following [appserver root]/profiles/[profile_name] directory.
2) Restart the Application Server.
3) Start the following services from administration console
   - EMCDocumentumAuthProviderService
   - EMCDocumentumRepositoryProvider
   - EMCDocumentumContentRepositoryConnector

Configure Connector for Microsoft SharePoint

The Configure Connector for Microsoft SharePoint operation is optional and requires the following syntax:

sharepoint-configurationCLI -f <propertyFile>

Where:

IMPORTANT: Modify the <propertyFile> called cli_propertyFile_ecm_sharepoint_template.txt located in the *[aem-forms root]*\configurationManager\bin\ directory.

10.5. Examples Usage

From the C:\Adobe\Adobe_Experience_Manager_Forms\configurationManager\bin, type:

```
ConfigurationManagerCLI configureLiveCycle -f cli_propertyFile.txt
```

Where *cli_propertyFile.txt* is the name of the property file you created.

10.6. Configuration Manager CLI Logs

If an error occurs, you can review the CLI logs located here in the *[aem-forms root]*\configurationManager\log folder. The log file generated will have a naming convention such as lcmCLI.0.log where the number in the filename (0) will increment when the log files are rolled over.

10.7. Next steps

If you used Configuration Manager CLI to configure and deploy AEM Forms on JEE, then do the following tasks now:

- UpgradetheCRXrepositoryandmigratethecontent
- Perform post deployment configurations

11. Appendix - Configuring the Connector for Microsoft SharePoint on the SharePoint Server

The Connector for Microsoft SharePoint allows you to integrate workflows from both the AEM Forms on JEE and the SharePoint development perspectives. This module includes a AEM Forms on JEE service and a sample SharePoint feature that facilitates end-to-end connection between the two systems.

The service provides search, read, write, delete, update, and check in/out capabilities with a SharePoint repository. SharePoint users can initiate AEM Forms on JEE processes such as an approval process from within SharePoint, convert documents to Adobe PDF, and manage the rights on a file in PDF or native formats. In addition, from within the SharePoint context, you can automate running AEM Forms on JEE processes from within SharePoint workflows.

11.1. Installation and configuration

After you configured the AEM Forms on JEE installation, carry out the following steps to configure the connector on the SharePoint server.

System requirements for the SharePoint server

Ensure that your server that runs the SharePoint site meets the following requirements:

- Microsoft SharePoint Server
- Microsoft .NET Framework 3.5

Installation considerations

Keep in mind the following, before you plan your installation:

- Before you run the installation, ensure that no other sites or web applications are using services on the IIS Server. Consult with your IIS Administrator before you proceed with the installation.
- (For Sharepoint server Farmed installation) The SharePoint administration service is running on the central administration server of the SharePoint server Farm. (For SharePoint server standalone installation) The SharePoint administration service is stopped on the SharePoint server.

11.2. Installation and configuration on the SharePoint server

Edit Environment Variables

Append path of stsadm.exe to PATH environment variable. The default path of stsadm.exe is `C:\Program Files\Common Files\MicrosoftShared\Web Server Extensions\14\BIN`.

Extract the web part installer

When you installed the AEM Forms on JEE server, the web part installer for SharePoint server files named `Adobe Connector-2013.zip` and `Adobe Connector-2016.zip` are created in the [aem-forms root]\plugins\sharepoint folder.

- If you are using Microsoft SharePoint 2013, copy file`Adobe Connector-2013.zip` to a folder on the Windows server that hosts SharePoint, and then extract the copied file.
- If you are using Microsoft SharePoint 2016, copy file `Adobe Connector-2016.zip` to a folder on the Windows server that hosts SharePoint, and then extract the copied file.

Install and Activate the Connector

1) (Optional) Select options for SharePoint Server Context menu before installing connector. See *Enable/Disable features* for detailed steps.
2) Run following commands in the listed order to install the Connector for SharePoint Server. Ensure that you run `stsadm - o enumsolutions` after each command to verify that the changes have been the propagated to all the servers.

   Run `stsadm - o enumsolutions` repeatedly, until the resultant xml contains `<state>pending</state>` tag.

   ```
   install.bat -create
   install.bat -add
   install.bat -deploy
   install.bat -install
   ```

   NOTE: For the install.bat -deploy command, run stsadm - o enumsolutions repeatedly, until the resultant xml contains <LastOperationResult>DeploymentSucceeded</LastOperationResult> tag.
3) Activate the connector from SharePoint Web Application. To activate the connector:
   a) Open SharePoint Web Application in a browser.
   b) Click **Site Settings**.
   c) Click **Site Collection Features.**
   d) Click Activate for **Adobe Connector** and **Workflow** feature.

Enable/Disable features

You can change options of context menu and disable other features on SharePoint Sites. For the Share-point Connector installed with default set of options, following options are enabled on SharePoint Server:

- Convert to Adobe PDF

- Enable for commenting by adobe reader.
- Secure with Adobe Policy.
- Invoke AEM Forms on JEE Processes

You may make changes to `Elements.xml` file to change above options and to enable or disable another features. To make changes to `Elements.xml`

1) Navigate to the folder containing extracted contents of `Adobe Connector-2013.zip` or `Adobe Connector-2016.zip` file.
2) Take backup of Elements.xml file. The default location of `Elements.xml`is `< Directory containing Extracted Adobe Connector-2013/2016.zip File >\TEMPLATE\FEATURES\LiveCycle\Elements.xml`
3) Open the `Elements.xml` file in a text editor.
4) Delete or comment the CustomAction elements of features that you want to disable .

Docuent Server feature	**CustomAction element ID**	**Description**
ReaderExtensions	LiveCycle.ApplyReaderExtensions	Enables Acrobat Reader DC extensions on PDF documents.
Rights Management	LiveCycle.RightsManagement.ApplyPolicyToPdf	Rights-protect PDF documents
	LiveCycle.RightsManagement.ApplyPolicyToDoc	Rights-protect Microsoft Word documents
	LiveCycle.RightsManagement.ApplyPolicyToXls	Rights-protect Microsoft Excel documents
	LiveCycle.RightsManagement.ApplyPolicyToPpt	Rights-protect Microsoft PowerPoint doments
	LiveCycle.RightsManagement.ApplyPolicyToDocx	Rights-protect Microsoft Word documents
	LiveCycle.RightsManagement.ApplyPolicyToXlsx	Rights-protect Microsoft Excel documents
	LiveCycle.RightsManagement.ApplyPolicyToPptx	Rights-protect Microsoft PowerPoint doments
	LiveCycle.RightsManagement.ApplyPolicyToDwg	Rights-protect Microsoft Excel documents
	LiveCycle.RightsManagement.ApplyPolicyToDxf	Rights-protect AutoCAD documents
	LiveCycle.RightsManagement.ApplyPolicyToDwf	Rights-protect AutoCAD documents

PDF Generator	LiveCycle.GeneratePDFFromPdf	Convert a PDF created from an image to a?text-based PDF if Standard OCR was used? as the file type in Site Settings.
	LiveCycle.GeneratePDFFromDoc	Generate PDF from Microsoft Word documents
	LiveCycle.GeneratePDFFromPs	Generate PDF from PostScript files
	LiveCycle.GeneratePDFFromEps	Generate PDF from EPS documents
	LiveCycle.GeneratePDFFromPrn	Generate PDF from PRN files
	LiveCycle.GeneratePDFFromDocx	Generate PDF from Microsoft Word 2007 documents
	LiveCycle.GeneratePDFFromPpt	Generate PDF from Microsoft PowerPoint documents
	LiveCycle.GeneratePDFFromPptx	Generate PDF from Microsoft PowerPoint documents
	LiveCycle.GeneratePDFFromXls	Generate PDF from Microsoft Excel documents
	LiveCycle.GeneratePDFFromXlsx	Generate PDF from Microsoft Excel documents
	LiveCycle.GeneratePDFFromBmp	Generate PDF from BMP files
	LiveCycle.GeneratePDFFromGif	Generate PDF from GIF files
	LiveCycle.GeneratePDFFromJpeg	Generate PDF from JPEG images
	LiveCycle.GeneratePDFFromJpg	Generate PDF from JPG images
	LiveCycle.GeneratePDFFromTiff	Generate PDF from TIFF images
	LiveCycle.GeneratePDFFromTif	Generate PDF from TIF images
	LiveCycle.GeneratePDFFromPng	Generate PDF from PNG images
	LiveCycle.GeneratePDFFromJpf	Generate PDF from JPF images
	LiveCycle.GeneratePDFFromJpx	Generate PDF from JPX images
	LiveCycle.GeneratePDFFromJp2	Generate PDF from JPEG 2000 images
	LiveCycle.GeneratePDFFromJ2k	Generate PDF from JPEG 2000 images
	LiveCycle.GeneratePDFFromJ2c	Generate PDF from JPEG 2000 images
	LiveCycle.GeneratePDFFromJpc	Generate PDF from JPEG 2000 images

	LiveCycle.GeneratePDFFromHtm	Generate PDF from HTM documents
	LiveCycle.GeneratePDFFromHtml	Generate PDF from HTML documents
	(Deprecated) LiveCycle.GeneratePDFFromSwf	(Deprecated) Generate PDF from SWF files
	LiveCycle.GeneratePDFFromFlv	Generate PDF from Flash video files
	LiveCycle.GeneratePDFFromTxt	Generate PDF from text files
	LiveCycle.GeneratePDFFromRtf	Generate PDF from Rich Text Format files
	LiveCycle.GeneratePDFFromMpp	Generate PDF from Microsoft Project files
	LiveCycle.GeneratePDFFromPub	Generate PDF from Microsoft Publisher?documents
Invoke LiveCycle process	LiveCycle.InvokeGenericLiveCycleProcessOnALL	Invoke LiveCycle Process
Adobe Forms Library	AdobeFormsLibrary	Set up SharePoint as the repository for forms data.Remove the CustomAction, ListTemplate and ListInstance elements.
AEM Forms user Tasks	LiveCycleUserTasks	Lists the user tasks.Remove the ListTemplate element.
LiveCycle Group Tasks	LiveCycleGroupTasks	Lists the group tasks.Remove the ListTemplate element.

5) Save and close `Elements.xml`

Uninstalling Connector for Microsoft SharePoint Server

1) Deactivate SharePoint Connector from Shrepoint Web Application. To deactivate SharePoint Connector
   a) Open SharePoint Web Application in a browser.
   b) Click **Site Settings**.
   c) Click **Site Collection Features.**
   d) Click Deactivate for **Adobe Connector**and **Adobe LiveCycle Workflow** Features.
2) On the command prompt, run the following commands in the given order. Ensure that you run `stsadm – o enumsolutions` after each command to verify that the changes have been the

propagated to all the servers. Run `stsadm – o enumsolutions` repeatedly, until the resultant xml contains `<state>pending</state>`tag.

```
Install.bat -uninstall
Install.bat -retract
Install.bat -delete
```

NOTE: For the Install.bat -retract command, run stsadm - o enumsolutions repeatedly, until the resultant xml contains <LastOperationResult>RetractionSucceeded</LastOperationResult> tag.

12. AEM Forms Credentials and Certificates

This section describes how to do the following tasks:

- Obtain the Document Security Rights credential.
- Obtain digital certificates for use with Digital Signatures.

12.1. Obtaining the Acrobat Reader DC extensions Rights credential

The Acrobat Reader DC extensions Rights credential is a digital certificate that is specific to Acrobat Reader DC extensions that enables Adobe Reader usage rights to be activated in PDF documents. If the credential is not installed, Acrobat Reader DC extensions users cannot apply usage rights to documents. You cannot use a standard digital certificate for this function; you must use the dedicated Rights credential.

The Rights credential extends the usage rights of each PDF file that Acrobat Reader DC extensions processes. It is a critical part of the software licensing and should be stored carefully in a secure environment.

The following types of Rights credentials are available:

Customer Evaluation: A credential with a short validity period that is provided to customers who want to evaluate Reader Extensions. Usage rights applied to documents using this credential expire when the credential expires. This type of credential is valid only for two to three months.

Production: A credential with a long validity period that is provided to customers who purchased the full product. Production credentials are unique to each customer but can be installed on multiple systems.

The Rights credential is delivered as a digital certificate that contains the public key, the private key, and the password used to access the credential.

If your organization orders an evaluation version of Acrobat Reader DC extensions, you receive an evaluation Rights credential from the sales representative you ordered the product from or from the website where you downloaded the evaluation product.

If your organization purchases a production version of Reader Extensions, the production Rights credential is delivered by Electronic Software Download (ESD). A production Rights credential is unique to your organization and can enable the specific usage rights that you require.

If you obtained Acrobat Reader DC extensions through a partner or software provider who integrated Acrobat Reader DC extensions into their software, the Rights credential is provided to you by that partner who, in turn, receives this credential from Adobe.

NOTE: The Rights credential cannot be used for typical document signing or assertion of identity. For these applications, you can use a self-sign certificate or acquire an identity certificate from a Certificate Authority (CA).

12.2. Obtaining digital certificates for use with Digital Signatures

Digital certificates are required for use with Digital Signatures. Although, you can configure and manage digital certificates after you install and configure AEM Forms, obtaining them before you install ensures that you are ready to use AEM Forms when it is deployed.

Digital certificates are obtained from a Certificate Authority (CA) and sent to you by email or over the web as a certificate file. This certificate file contains the public keys (also called *certificates*) and references to private keys (also called *credentials*) that are used for encrypting and signing documents. Certificates do not contain actual private keys; instead, they contain a reference to the identity of the user who keeps the private keys securely stored in an encrypted file or HSM.

You can use Internet Explorer (Windows) or OpenSSL (non-Windows operating system) to export PFX, P12, and CER files for certificates that are stored in any compatible certificate store that is available on your computer. PFX files can be exported only as the certificate store or the credential itself permits. CER files that hold the public key that corresponds to a credential can also be exported from PFX files by using either Internet Explorer or OpenSSL.

NOTE: You can configure and manage certificates, credentials, and Certification Revocation Lists (CRLs) for use with AEM Forms by using Trust Store Management, which is accessible through the web-based administration console. (See administration help.)

The CRL distribution point describes where you can download the CRL that corresponds to a particular CER or PFX file.

The following file types are supported:

Certificates: DER-encoded X509v3 and base64-encoded certificate (.cer) files. Certificates that verify the trust.xml file can be either DER-encoded or base64-encoded.

Credentials: RSA and DSA credentials up to 4096 bits in standard PKCS12 format (.pfx and .p12 files).

CRLs: Base64-encoded and DER-encoded CRLfiles.

Maintaining the security of private keys (credentials) is critical to ensuring the stability of sensitive information. A physical storage device, often called a *Hardware Security Module* (HSM), typically provides the maximum level of security for private keys. If you do not use a physical device, it is important to store highly sensitive private keys and certificates in encrypted files in a safe place.

Digital Signatures supports the industry-standard PKCS #11 interface to communicate with HSMs. An HSM vendor can provide the resources and tools that you need to install and configure an HSM storage system.